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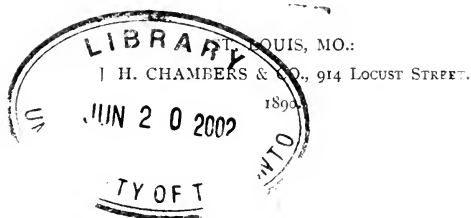






THE
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INDEX TO VOL. VII.

AUTHORS.

ORIGINAL ARTICLES.

Alt, A.,	- - - - -	I, 42; II, 45; V, 152, X, 314
Ayres, S. C.,	- - - - -	III, 69
Coggin, D.,	- - - - -	I, 1
Culbertson, H.,	- - - - -	I, 8
Dunn, J.,	- - - - -	XII, 399
Friedenwald, H.,	- - - - -	IX, 285
Keyser, P. D.,	- - - - -	VIII, 241
Kirkpatrick, E. A.,	- - - - -	IV, 103
Koller, K.,	- - - - -	VII, 227
Lippincott, J. A.,	- - - - -	VII, 207
McAchrn, J. J.,	- - - - -	XI, 364
Merz, C. H.,	- - - - -	IX, 283; XI, 361
Millikin, B. L.,	- - - - -	VI, 175; X, 311
Pitts, B.,	- - - - -	IV, 107
Pooley, T. R.,	- - - - -	III, 88; IX, 279
Post, M. H. V.,	- - - - -	V, 148
Smith, F. T.,	- - - - -	V, 152
Stevenson, D. W.,	- - - - -	XII, 395
Theobold, S.,	- - - - -	II, 37
Webster, D.,	- - - - -	V, 150; VI, 171
Wood, C. A.,	- - - - -	VII, 223
Wüerdemann, H. V.,	- - - - -	V, 137; XII, 387

SELECTIONS FROM AMERICAN MEDICAL JOURNALS.

Allport, F.,	- - - - -	XI, 367
Ayres, S. C.,	- - - - -	VI, 188; XI, 377
Dabney, S. G.,	- - - - -	IV, 125
Evans, T. C.,	- - - - -	V, 166
Fulton, J. F.,	- - - - -	I, 23
Hotz, F. C.,	- - - - -	VIII, 270
Keyser, P. D.,	- - - - -	VI, 197

Lippincott, J. A.,	- - - - -	XI, 374
Marlow, F. W.,	- - - - -	IV, 128
Morrison, J. A.,	- - - - -	IV, 123
Randolph, R. L.,	- - - - -	V, 161
Roberts, J. B.,	- - - - -	II, 60
Tyner, T. J.,	- - - - -	X, 343

TRANSLATIONS.

Alt, A.,	- - -	I, 13; II, 47; III, 91; IV, 132; IV, 133; VI, 182; XII, 425
Wood, C. A.,	- - -	XI, 347; XII, 403

CORRESPONDENCE.

DeBeck, D.,	- - - - -	VIII, 244
Gifford, H.,	- - - - -	VIII, 245
James, V.,	- - - - -	V, 155
Kirkpatrick, E. A.,	- - - - -	XI, 366
McAchrn, J. J.,	- - - - -	IV, 130
Zehender, W. von,	- - - - -	V, 156

OBITUARY.

Becker, Otto,	- - - - -	IV, 133
Coccus, E. A.,	- - - - -	XII, 425
Culbertson, H.,	- - - - -	VII, 240
Ferrer, H.,	- - - - -	X, 346
Hock, Jac. H.,	- - - - -	IV, 132
Nodine, F. O.,	- - - - -	XII, 427
Schell, H. S.,	- - - - -	V, 160

SOCIETY PROCEEDINGS.

American Medical Association,	- - - - -	V, 157
American Ophthalmological Society,	- - - - -	VI, 204; VIII, 247
British Medical Association,	- - - - -	IX, 299
International Medical Congress,	- - - - -	I, 19; III, 99; V, 159; IX, 301
Ophthalmological Society of the United Kingdom,	- - - - -	II, 51; IV, 117; VIII, 267
		IX, 290; X, 318; XI, 381; XII, 414

SUBJECTS OF ORIGINAL ARTICLES.

C

Capsulitis Purulenta et Hæmorrhagica, - - - - -	IV, 103
Cleanliness in Eye-Surgery, - - - - -	VI, 175
Clinical Cases at the New Amsterdam Eye and Ear Hospital, - -	III, 88
Contributions to Ophthalmic Surgery, - - - - -	VI, 171

E

Ectropium, Operation for, of the Lower Lid, by the Sliding Flap Method, - - - - -	IX, 279
Elimination of the Cornea and its Effect upon the Eye, etc., - -	VII, 227
Epithelioma, Recurring, Of the Cornea, - - - - -	V, 150

F

Fibroid, A Case of Malignant, Of the Orbit, - - - - -	XII, 399
---	----------

G

Glaucoma Fulminans, A Case of, Of Peculiar Interest, - - -	VIII, 241
Gripe, Some Eye-Affections, Seen as Sequelæ of the - - -	II, 42
Gun-Shot Wounds of the Eyeball, Two Cases of - - - -	VII, 223

I

Interstitial Keratitis, A Case of - - - - -	XI, 361
---	---------

L

Laceration of the Eye, Extensive, With Recovery, - - - -	IX, 283
Laceration of the Internal Rectus, - - - - -	X, 364

M

Medical Notes, - - - - -	I, 8
--------------------------	------

O

Opacities in the Eye, Differential Diagnosis of, - - - -	XII, 403
Optic Nerve, Tumors of, With Two Original Cases, - - -	III, 69
Optic Neuritis, Basal Meningitis, An Occasional Sequence of Measles, -	I, 1

P

Paralysis, Complete, Of the Lateral Movements of Both Eyes. Ability to Converge Remaining Intact, - - - - -	X, 311
Phlegmonous Gangrene of the Lid, A Case of - - - - -	IX, 285
Pyoktanin, Experiences With, in Ophthalmological and Otological Practice, - - - - -	X, 314

S

Sarcoma, Of the Iris, A Case of, In a Child 2 Years Old, - - -	II, 42
Sclero-Corneal Tumor, A Case of - - - - -	V, 152
Skiascopy, The Use of, In the Determination of Refractive Errors, -	V, 137
Squint, Notes of Two Cases of, and One of Esophoria, etc., - -	II, 37
Syringing, Intra-Ocular, In Cataract Extraction; Report of Fifty Operations, - - - - -	VII, 207

T

Trachoma, - - - - -	IV, 107
Trachoma, The Differential Diagnosis Between, and Follicular Conjunctivitis, - - - - -	XII, 387

V

Vitreous Body, Removal of a Piece of Steel, From the - - -	V, 148
--	--------

AUTHORS AND SUBJECTS OF THE TRANSLATED ARTICLES.

On the Value of Mydriatics and Myotics for the Improvement of Fixed Opacities in the Dioptric System. D. B. Wicherkiewicz, -	I, 13
Ozæna and Infectious Ulcers of the Cornea. E. von Millingen, -	II, 47
On the Circulation in the Retina in Cases of Anæmia from Chronic Hæmorrhage and Chlorosis, and Its Dependence on the Condition of the Blood. E. Ræhlmann, - - - - -	III, 91
Pathology and New Treatment of Sympathetic Ophthalmia. Ch. Abadie, - - - - -	VI, 182
Treatment of High Degrees of Myopia by Removal of the Lens. Fukala, - - - - -	XI, 347
Successful Treatment of Two Cases of Buphthalmus, by Stolting, -	XII, 403

SUBJECTS OF THE SELECTED ARTICLES.

Symptoms of Grave Diseases of the Nervous System Relieved by Restoration of the Equilibrium of the Eye-Muscles, - - -	I, 23
Extraction of Cataract, - - - - -	II, 60
Artificial Attachment of Detached Iris, - - - - -	IV, 123
The Value of Ocular Symptoms in the Diagnosis of Syphilis, - -	IV, 125
Primary Chancres of the Conjunctiva, - - - - -	IV, 128
The Use of Fluoresceine as a Means of Diagnosing lesions of the Cornea,	V, 161
Bilateral Orbital Gummata, - - - - -	V, 166
Address of Chairman of Section of Ophthalmology, - - - - -	VI, 188
Glaucoma Fulminans after Extraction of Cataract with Iridectomy, -	VI, 197
A Simple and Quick Method of Detecting Astigmatism, - - -	VIII, 270
Preliminary Capsulotomy in the Extraction of Cataract, - - -	X, 343
Some Remarks on the Relief of Remote Neurosis by the Restoration of Ocular Equilibrium, - - - - -	XI, 367
New Tests for Binocular Vision, - - - - -	XI, 374
Case of Sympathetic Inflammation after Panophthalmitis of the Injured Eye, - - - - -	XI, 377
The Bowman Lecture, - - - - -	XII, 419

NEWS.

—, - - - - -	I, 35; I, 36; III, 102; IV, 132
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THE AMERICAN JOURNAL OF OPHTHALMOLOGY.

VOL. VII.

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No. 1.

OPTIC NEURITIS:¹ BASAL MENINGITIS AN OCCASIONAL SEQUENCE OF MEASLES.

BY D. COGGIN, M.D., SALEM, MASS.

You are asked this evening to briefly consider a subject that can hardly be thought to savor too strongly of a specialty. Of the four cases to be described, three presented symptoms, more or less pronounced, of localized meningitis occurring after measles. It is a matter of keen regret that the clinical history is so unsatisfactory. Being derived wholly from the friends of the patients, it is naturally deficient in the valuable data that the attending physician only could give.

CASE I.—DOUBLE OPTIC NEURITIS, ENDING IN RECOVERY OF VISION.

May 9, 1882. Nelly S., æt. 9 years, a healthy child, three days previously returned from school at night, saying she could not see; headache. An older sister says the child sits as if dazed, disinclined to talk; sleeps much; no action of bowels for four days.

¹Read before the Essex Southern District Medical Society, January 7, 1890.

Recognized a thumb from finger across the office. Looked down constantly, so examination was difficult. Pupil dilated; no strabismus; a color-blindness noticed at home; a marked double optic neuritis; no hæmorrhages. Ordered laxatives and *potass. iod.* (i. daily). Sixteen days later color-sense better; saw large letters ($\frac{1}{LX}$); œdema of discs about gone; retinal vessels tortuous; pupils smaller but inactive.

June 8. Read large type (Sn. 1.75); has slept so soundly nights as to make it far from easy to awaken her; inclined to play out of doors; good appetite and bowels no longer constipated. Optic discs indicated atrophy, so strychnine was prescribed. Improvement in sight soon followed, and after six weeks it was half of normal, and in September, four months after the neuritis, she read the finest print (Sn. .50 and $\frac{1}{VI}$), when all treatment was discontinued.

In September, 1889, vision was absolutely normal.

In this case, the mother of the child being dead, it was difficult to say whether measles had preceded the brain-trouble some years before. But the symptoms indicated that the double neuritis had a cerebral origin, and most likely it was due to a basal meningitis. It was most gratifying, after the lapse of seven years, to find the sight had become perfect, for it is well known that atrophy of the optic nerve is a frequent sequel of a preceding inflammation.

CASE II.—ATROPHY OF BOTH OPTIC NERVES FOLLOWING MEASLES.

September 6, 1887. Helen L., æt. 4 years (favor of Dr. Geo. H. Pillsbury, of Lowell); nervous prostration in the preceding spring, terminating in measles; high fever, but without delirium; sixth nerve paralyzed, so the right cornea converged so far as to be "out of sight." Her attending physician said "she had effusion of the brain;" co-existing darkness, but it disappeared; child complained then and since that objects seemed dark.

At time of examination there was a convergent squint of 2

mm. of the right eye. Counted fingers held near her face (0.20); marked atrophy of optic nerves. Prognosis unfavorable. Strychnine and the galvanic current were ordered.

In August, 1889, vision had improved slightly ($\frac{3}{10}$ and she barely read capital letters of Sn. 2 at 0.10). Normal action of right externus. Health excellent and is anxious to attend school.

CASE III. DOUBLE OPTIC NEURITIS: SUBSEQUENT ATROPHY.

January 21, 1889. Edith E., æt. 5 years; a robust child; no family history of either syphilis or tuberculosis; measles last month, but slightly ill, no delirium, and played around as usual. Sixteen days ago it was noticed that the right eye "turned in." Child had been in bed two weeks. Disinclined to play, drowsy by day and restless by night. No pain referred to head; has vomited once or twice; urinates once during the night; quantity passed daily apparently normal. Result of analysis negative. Bowels constipated; prickling sensation in eyes; pupils dilated and inactive; counts fingers best with right eye on looking down; child fretful and inclined to sit in mother's arms with eyes closed, so the mirror was not readily used.

However, the appearance of the fundus of both eyes was striking, consisting of an intense neuro-retinitis, the papillæ being much swollen and hiding the retinal vessels, and with numerous hæmorrhages, especially in the right retina.

The picture resembled closely what is seen in nephritic-retinitis, but in the absence of albuminuria it seemed to be due to a cerebral growth, though no headache had been complained of. *Sod. iod.* (1.0 daily) was prescribed with laxatives. No change having occurred after twenty days, save the child "seemed brighter and more like herself than for two months," the parents were advised to consult Dr. J. J. Putnam.

In a note, dated February 14, Dr. Putnam ascribes the neuritis to meningitis following measles, and he kindly recalled the cases reported by Dr. O. F. Wadsworth, in the *Bost. Med. and Surg. Jour.*, December 30, 1880. He advised increased doses of the iodide; the prognosis "very bad."

In April, the œdema had gone, as well as the hæmorrhages. Discs pale and retinal vessels fine; fundus of both eyes studded with glistening dots singly and in groups; child less irritable, plays in open air all the day, sleeps well, and bowels act regularly; pupils contract in sunlight. Strychnia was substituted for the sodic iodide, and, later, the primary current was used. In August, when last seen, the ophthalmoscopic appearance was unchanged. Vision amounted to the counting of fingers, the recognition of a key, pencil, etc., at ten centimetres. Examination of color-sense futile.

CASE IV.—RETRO-OCULAR NEURITIS (?) TERMINATING
FAVORABLY.

April 10, 1889. Miss V., æt. 14 years (referred by Dr. Edward Neuhall, of Lynn); is tall for her age, having grown rapidly of late. Measles five weeks previously; was stupid, but not delirious; went home from school, feeling dizzy and complained of pain in her head; vomited several times; pupils dilated after the second week; "green and red blindness" was noticed; pulse 40 at one time, but it rose in frequency under treatment; catamenia had appeared six months before and were present when illness began; retention of urine, so a catheter was employed; was nervous and querulous, less so now; unable to read the largest test-letters ($\frac{5}{LX}$ Sn.) at five metres; no glass helped vision. Several tests for malingering were used, but the loss of sight was found to be real. Pupils still dilated; no history of strabismus. The ophthalmoscope revealed normal discs; visual field not affected; not much dread of light. A lotion of muriate of pilocarpine was ordered, and iodide of soda internally.

May 31. Vision materially better; pupils act (dilate to 8 mm. and contract to 5 mm.). Pilocarpine last used four days ago. Not "come round" yet.

October 19, sight nearly normal; right eye, $-\frac{3}{V}$, and left good; left, $\frac{5}{XII}$. Atrophy of outer half of right optic disc; is feeling well and has resumed the use of her eyes. The gain in sight

is worthy of note, though, so far it is less marked than in the case first cited.

About two months ago (since these notes were collected) a child, *æt.* 2 years, was brought to me because of poor sight since attack of measles. It held its toys close to its eyes, and evidently saw indistinctly across the room. Being restless, it was not possible to use the ophthalmoscope, so no diagnosis was then made, but it was deferred to a later season.

In the first case measles cannot be considered as a factor in bringing on the optic neuritis, but the marked neuro-retinitis of the second case and the optic nerve atrophy of the third—which was doubtless consecutive to an optic neuritis—and the probable double neuritis behind the eyeball of the last case, all point to the presence of measles as the possible primary cause of the loss of sight. It is well known that the elevated temperature that characterizes the stage of invasion of measles is often accompanied by delirium, and occasionally by convulsions, so that it is somewhat remarkable that authors of books on practice so infrequently refer to any cerebral complication.

One noticeable exception should be made, however, for nearly a quarter of a century ago the lamented master, under whose teaching some of those present were permitted to sit—the late Austin Flint—in the first edition of his “Practice,” referred to tubercular meningitis as occurring in a certain proportion of cases after recovery from rubeola. Oculists and neurologists abroad (and Wadsworth and Leszynsky¹ in this country) have written upon the subject and have reported cases.

The lesion is supposed to be a circumscribed, basal meningitis, and non-tubercular, though rarely tubercular deposits are present. It is a curious fact that the eyes may present the changes incident to a severe neuritis, and yet with no perceptible impairment of sight. Again, the vision may amount to only a perception of light.

In cases like the above, the physician who uses the ophthalmoscope has the great advantage in not groping blindly in

¹N. Y. Medical Record, April 27, 1889.

search of a diagnosis; on the contrary, he is able to testify as to what he has seen. Not wholly relying on the ordinary signs of brain disturbance, pain, drowsiness, paralysis of cranial nerves and the like, by merely looking within the eyes he is frequently enabled to give an opinion as to the trouble with a precision that is calculated to excite the envy of his less favored professional confrères. Measles, like the poor, we have always with us. Considering the number of cases seen yearly by practitioners, it would seem as if meningeal complications, though occurring only infrequently, must occasionally be observed. The subject is one of interest, for, to some, the meagre number of cases so far reported may not be wholly conclusive, for to their minds a dozen coincidences may not satisfactorily establish a theory. (V. Gowers, *Medical Ophthalmoscopy*, second edition, p. 242).

In what way measles and other exanthemata sometimes terminate in meningitis, the author is unable to explain.

The desirability of making a post-mortem examination in these cases cannot be too strongly emphasized, if we would throw more light on this very interesting, yet unsettled, question.

One point, though not relating to measles, deserves a word of remark.

Till the present time, the pressure of double optic neuritis, with intense headache, has ordinarily been supposed to indicate the existence of an intra-cranial tumor. For example, a dozen years ago the relatives of a man thus affected were informed, on high authority, that he could not live two years. But aside from his blindness, owing to the resulting optic nerve atrophy, he is in health to-day. If a neoplasm ever was present, it no longer causes the cerebral disturbance that was an early and prominent symptom of his trouble, and one which would, perhaps, now be ascribed to a localized meningitis.

The following brief history of an analogous case illustrates what one may learn from a diagnosis according to routine.

Last April, J. R., æt. 35 years, a married man of correct habits, sought advice because of indistinct sight with occa-

sional double sight of about a month's duration ($\frac{5}{xviii}$ right, $\frac{5}{viii}$ left, field normal; good color sense).

A year before he received a blow on the right side of his head, and he said the same side of his body was afterwards paralyzed for a few hours. His health was not apparently impaired subsequently, though he had noticed morning nausea for some weeks, and he had been obliged to urinate during the night oftener than formerly. He had pronounced double optic neuritis; no hæmorrhages. Urine examined by Dr. F. S. Atwood; sp. g. 1028; no albumen or casts; some granular matter and mucous. Iodide of soda, 1 gram a day, was ordered.

He soon returned, complaining of severe frontal pain with vertigo; great staggering on walking; fair patella reflex.

By July the vision had so fallen off that fingers only could be counted when held close to his eyes.

In the pretty confident belief that a tumor must be present, he was referred to Dr. J. P. Putnam, who felt inclined to ascribe the neuritis to the blow of the preceding year. He thought it probable that a hæmorrhage had involved the crura cerebri and the optic tracts, and advised largely-increased doses of the iodide and association with a small daily amount of mercury. He was seen later by Drs. Walton and Cheney at the M. S. Hospital.

In October the headache and vertigo had quite passed away and with it the remaining eye-sight.

When last examined, the swelling around the discs had disappeared, leaving marked atrophy of both nerves, and without any trace of light-perception.

MEDICAL NOTES.

BY H. CULBERTSON, M.D., ZANESVILLE, OHIO.

PTERYGIUM.

The cause of this lesion, so far as I know, is obscure. It is probable there are several factors active in producing this affection. In many of my cases a marginal corneal ulcer has been the cause. Trachoma is a cause. The inflammation from the presence of gunpowder at the corneal border may induce it, and other foreign particles also. Carunculitis may induce it from whatever cause excited. The location of this "wing," as all know, is generally on the nasal side of the cornea, and its situation on the temporal side is comparatively rare, and it is still less often seen above, and so far as my own observation is concerned, I do not remember to have seen a case below the cornea. It is not improbable that a greater quantum of blood circulates at the inner canthus, in the region of the lacus lachrymalis, in the caruncle, from the free vascular anastomoses between the nasal, palpebral, angular and supraorbital (branches) arteries, than is found at the external canthus and its vicinity. It is possible too that there is less support from the eyelids at the inner, than at the outer angle of the eye. This favors hyperæmia at the inner angle. The eye is being cleansed from the outer to the inner angle by the lachrymal secretion, and hence free foreign bodies are deposited at the inner angle, often inducing irritation and inflammation at this point. If the tears are decomposed this may be a factor in inducing pterygium.

It is not improbable that the great duty imposed upon the internal rectus muscles, as stated by Dr. Theobald, is a factor.

But from whatever cause induced this affection is somewhat difficult to cure. For a number of years I have thought that the great objects are to induce a firm marginal corneal and non-vascular scar, which acts as a barrier against the return of the disease (as we seek to place healthy skin between the divided cicatrix from burns), and also to promote contraction and diminution in the pterygium itself in cases where it is not abscised. Suppuration favors ultimately the wasting of the "wing" when not removed. I do not remember of having secured a union by first intention of the conjunctiva at the apex of the triangle after elevation of the pterygium.

I have done all the operations that can be done for this affection, and now prefer to do the following procedure. The eye under cocaine, the apex of the wing is firmly seized with rat-toothed forceps, and torn off or clipped close to the cornea. The flap is then drawn toward its base and cut with scissors back to its base. Nothing is done with the bed of the pterygium, nor with the "wing;" it is simply left lying free in the bed made by the operation. It is now shrunken, because its basic circulation has been cut off in the operation. Soon some inflammation follows in the "wing," leading on ultimately to further wasting and diminution in the size of its vessels. No suturing of the conjunctiva is employed, as the wound does not unite primarily, at least generally, and the bed of the wound is left open and the now retracted wing layed in it. Soon the flap unites along its sides, and the scar of cornea and apex of flap heals.

After the operation the following collyrium is used three or four times daily to diminish the caliber of bloodvessels and size of flap, viz.:

Rx	Cupri sulph.,	-	-	-	-	-	gr. $\frac{1}{2}$.
	Cocaine muriate,		-	-	-	-	gr. iij.
	Aqua borac.,	-	-	-	-	-	ʒj.

Filt. S. 3 or 4 drops in eye t. d.

The object is to keep down reaction and to avoid caustics. Use is made of a 10 grain solution of boric acid, to the ounce of water, as a disinfectant. I have long since ceased to abscise a

pterygium, finding this course too often leads to a new growth and to the contraction of this toward the corneal margin, and advancing the caruncle toward the cornea and limiting the excursion of the eyeball, and which wing becomes more fleshy than before the operation. The purpose is to make as small a wound as possible and diminish the irritation to the lowest point. A scar remains at the margin of the cornea, which generally persists as a guard against the return of the affection, save in the lightest forms of pterygium.

MERCURIAL PROPHYLAXIS.

Numerous operators have availed themselves of the exhibition of mercury to prevent inflammation following upon surgical operations.

Occasionally this plan has been of advantage to me, as in the case briefly cited.

Ten years ago, having extracted a cataract for a gentleman of plethoric habit, whose face and neck were continually flushed, and who had a short neck and injected conjunctiva, I did not expect trouble, as the operation was normal in every respect. However in three days plastic iritis came up, which was relieved without mercury, leaving a closed pupil adherent to remains of capsule. Some weeks after, when the eye was free from irritation, I made a central transverse pupil through capsule and iris, with a very small iris scissors, and through which the patient saw well. But iritis again recurred, was cured by treatment without mercury and the pupil again closed. Waiting several weeks until the eye was free from irritation, I employed mercurial inunctions freely for twenty-four hours before operating, when I opened the cornea with a broad, spear-pointed and flat knife at its lower border, and dividing with the scissors, the iris and remains of the capsule, in the coloboma, from the iridectomy, as high up as it was closed. The inunctions were continued until the gums were touched at the end of three days, and I had the satisfaction of being relieved of my *bête noire*, and sending my sixty-year old patient

home in two weeks, seeing so well that he could "shoot a squirrel from the top of the highest trees as well as he ever did" with this eye.

MERCURY IN CHRONIC CHOROIDITIS AND RETINITIS.

Not infrequently I have found this agent useful not only in the more active stages, but also in later periods of these diseases. As we cannot determine just how much the retinal textures are histologically involved by plastic effusions from the inflammation, owing to the transparency of the retina, I have frequently improved vision by guarded courses of mercurial inunction, followed later with the bichloride of mercury by mouth, and continued possibly one or two months.

Several years ago, an old and public man, æt. 70 years, called me in as consultant, who was suffering with a diseased and worthless eyeball, and with sympathetic inflammation of the fellow eye.

The indications were to remove the former by enucleation, but on careful consideration I determined that the man was too feeble to undergo the operation, and gave morphine and chloral, and stimulants and quinia in sustaining doses, and used mercurial inunctions to improve the condition of the fellow eye. The result was that the vision of the eye was restored, and the worthless eye became atrophied and quiescent, and the patient slowly recovered.

Another case. I removed a pasty cataract from a lady, æt. 50 years. The operation was smooth and done under Panas fluid, and the chambers were washed out with boiled boric acid solution, filtered and used warm. I did Galezowski's operation, and the pupil contracted well after using a weak eserine solution, $\frac{1}{2}$ gr. to 5j. She saw well immediately after the operation. Next day there was iritis which, in spite of treatment, disinfectants, etc., became panophthalmitis, and even the cellular tissue of the orbit became involved. In six days I was compelled to remove the eyeball. The bleeding from the orbit was so free that I plugged Tenon's capsule with a

narrow strip of muslin, saturated with pure undiluted Liq. ferri persulphat. This arrested the bleeding, and in three days the strip became detached and was drawn out of the open capsule. Disinfectants were used freely. Quinine, tr. iron, stimulants, and from the day of the removal of the eyeball mercurial inunctions were used, and on the third day the gums were touched, when the inunctions were discontinued. The patient recovered promptly, and the orbital cavity did not suppurate outside of the capsule of Tenon. She stated to me that her physician at home had told her that she was subject to erysipelas of the head and face. But her eye inflammation was not erysipelatosus. From the time she came under the influence of the mercury there was a decided improvement observed.

Again, if on enucleating an eyeball, I find the fellow eye sympathetically involved, I use morphine and chloral internally, keeping the patient steadily under their influence, and use mercurial inunctions for a few days, and often follow with Hydr. bichloride internally, looking to the protection of the retina and choroid of the remaining eye by mercurials.

To refer to another subject, I would say that my experience has taught me that in all operations upon the lens capsule for secondary cataract, it is of the first importance not to involve the iris in the operation. If the case will admit, my rule is, keep off the iris.

I must not forget to call the attention of ophthalmologists to the use of antipyrin in 10 grain doses, usually requiring only two or three doses, one every hour, in the first stages of iritis. I first used this June 14, 1885, and published the same. This agent still does well by me in such cases.

TRANSLATION.

ON THE VALUE OF MYDRIATICS AND MYOTICS FOR THE IMPROVEMENT OF VISION IN CASES OF FIXED OPACITIES IN THE DIOPTRIC SYSTEM OF THE EYE.

BY D. B. WICHERKIEWICZ.

Archives d'Ophthalmologie.

A beginning cataract causes much dazzling by the diffusion of luminous rays and this again causes such a considerable diminution of vision, that it is out of proportion of the real opacity in the lens.

The use of dark glasses does not help the patient a great deal, often not at all. Since the pupil is less exposed and receives less light (? Transl.), it is dilated and the luminous rays, although weakened, penetrate into the eye over a larger surface which is lying in front of the dim portions of the lens: in consequence, the eye receives the image of the objects more blurred and with contours less sharp, than formerly. Moreover, if a patient with beginning cataract puts on dark glasses on a very dark day, he sees no clearer on account of the lack of light. Therefore, such patients use dark glasses in exceptional cases only; when they use them, they do so only in order to defend themselves against the too brilliant glare of the light.

We know that, when we have not to deal with a nuclear cataract, the opacity of the lens begins at its periphery and gradually increases toward its centre in the anterior and poste-

rior cortical substance. As soon as the opacity covers more than half of the pupil, the patient begins to experience the well-known disagreeable symptoms of blurring, troubled vision, etc., and that is just the moment when he comes to consult the physician.

And what does the physician do? Most frequently, under some pretext or other, he hides from the patient his real condition, even at the risk of being considered an ignorant, who could not recognize the disease, in case the patient should see a physician who should tell him the truth. In other cases he tells the patient simply what is the matter with his eye, and thus takes at once away the hopes of improvement by a successful operation, which is so sweet in such cases.

From this on the patient troubles himself more or less for months and even years without the least consolation, when it would have been the physician's duty, not only to comfort the unfortunate one and to fill his heart with hope, but even to ease the weary time of waiting until the cataract is fully ripened and to help, as much as possible, to attend to his affairs, follow his daily business, his pleasures even, his accustomed ways, as much as his vision will allow.

According to these indications the mydriatics and myotics help greatly to solve this difficult problem.

When we have to deal with opacities in the refracting media situated in the centre, that is central opacities in the cornea, an anterior or a posterior capsular cataract, we may try by the aid of mydriatics, especially those that do not interfere with accommodation at all (cocaine), or at least but little (homatropine, hyoscyamine) (? Transl.) to improve vision by uncovering such parts of the refracting media which are more transparent.

Yet we are taught by experience that although these advantages seem useful in theory, they are not so in practice; moreover, it does not lie in our power to eliminate the dim portions of the refracting media from the field traversed by the light rays and in consequence they always render the images blurred. To this we must add, that the axial rays do not help in the formation of the image.

It is, therefore, certain that we do but little in the way of improvement by the mydriatics, whilst on the contrary, we often run the risk of bringing about considerable blurring.

According to my opinion, the employment of a mydriatic which does not influence the accommodation, like cocaine, could only be indicated in cases in which it would be desirable to procure near-vision, and when we would have to deal with central opacities of the refracting media. It is well known that patients afflicted with this kind of opacity see comparatively better at a distance than near by, because the convergence of the visual axis induces at the same time a contraction of the pupil, so that the opacities may cover it totally. To what extent a single instillation may help in such cases, may be seen from the following case taken at random from many others.

M. S., æt. 64 years, has a nucleo-cortical cataract of the right eye, on his left cornea are nubeculæ almost centrally situated, and, moreover, considerable irregular opacities in the anterior cortical substance. L. E. $V = \frac{6}{XII}$; H+4.D; with +6 Schweigger 0.8; punctum proximum 30 centimetres. Half an hour after the instillation of a 3% solution of cocaine $V = \frac{0}{XII}$; H+4; Schweigger 0.5 with little difficulty, and even 0.4 with +6; punctum proximum 30 centimetres.

In cases of a high degree of myopia, we might employ homatropine, jusquiamine, or even atropine; yet, it is better not to employ these habitually, because the repeated instillation of these remedies is not without danger. Furthermore, the advantages gained by the artificial mydriasis, do not, as a rule, counterbalance the inconveniences it causes by producing the blurring which is always very disagreeable.

Under the conditions just mentioned we can gain much better and lasting results by carefully making an optic iridectomy (as I have advocated in an article in *Centralblatt f. pr. Augenheilkde*, February, 1883). The condition is different, when the opacities lie in the periphery of the dioptric system. Peripheral opacities of the cornea as well as certain forms of cataract cause disturbances of vision which by the instillation of a my-

otic cannot only be for the time sensibly diminished, but even completely eliminated.

Let us suppose, that we have to deal with the development of a partial peripheric traumatic cataract, or, what is more often the case, with a beginning senile cataract, which beginning in the periphery continues to grow toward the centre, a condition fraught with visual disturbances. If we bring about a contraction of the pupil in such a case, we can hope for a marked improvement in vision. Among the well-known myotics, it is especially the pilocarpine which before others deserves to be mentioned here, since it contracts the pupil sufficiently and for a certain period of time, without influencing the accommodation too strongly and persistently.

Eserine evidently acts upon the accommodation as pilocarpine does upon the contraction of the pupil. The researches of W. Lang and T. W. Basset prove this to be the case. * * * Another remedy little used by oculists, which belongs to the class of myotics is muscarine. * * * Krenchel and Schmiedeberg agree, that the influence of muscarine upon the iris is independent of the one this substance exerts upon the accommodation ; there are patients in whom the simultaneous instillation of muscarine and atropine dilates the pupil considerably, and causes at the same time a spasm of the accommodation. It is evident from this, that muscarine does not answer our ends.

Aside from the physiological properties which make pilocarpine preferable to eserine and muscarine, there is another grave reason, why we should not recommend the use of these latter remedies too strongly, and that is, that they disintegrate very easily while pilocarpine, on the contrary, if of good quality, can be kept for whole months without losing anything of its efficacy. Moreover, eserine causes a hyperæmia of the iris, and often ciliary neuralgia, while pilocarpine does not.

I have, in consequence, given the preference in most of my cases to a $\frac{1}{2}$ or 1 % solution of pilocarpine, and the patients so treated, whether they were emmetropes, myopes, or hypermetropes, were always astonished at the prompt and satisfactory

effect of this remedy. Especially was this so with the hypermetropes, whose accommodation is increased by the pilocarpine, which is not the smallest benefit they derive from its use.

These and the presbyopes may use two to three instillations a day, while for myopes one drop once or twice a day may suffice.

Instead of making a long statistic enumeration and to report my observations, I prefer to cite only one case in support of what I have stated concerning the use of pilocarpine.

M. Z., æt. 67 years, R. E. $V=^{20}/_c$; H 3.5; Jaeger 12 with +6 D. Punctum proximum 27 centimetres. L. E. $V=^{20}/_L$; H 2.5; Jaeger 7 with +5 D. Punctum proximum 27 centimetres.

The ophthalmoscope shows an opacity in the cortical substance beginning at the equator and reaching with some processes into the middle of the pupil; in the left eye the opacity reaches to within the margin of a midde-wide pupil. Fundus normal.

Prescription: $1/2\%$ solution of pilocarpine to be instilled mornings and evenings.

A few days after the patient is greatly surprised at the effect produced by the drops, since she sees now quite well.

R. E. $V=^{20}/_{LXX}$; H 3; Jaeger 10 with +6.

L. E. $V=^{20}/_{XL}$; H 2; Jaeger 4 with +6.

The pupils are nicely contracted, but act well upon the stimulus of light.

It is evident that pilocarpine is not only of value in cases of unequal refraction or diffusion of the light, as we find in beginning cataract, but it will be equally valuable for other optical purposes in order to aid the restricted accommodation, in aphakia with remnants of the capsule or cortical substance, in corneal opacities, in dislocation of the lens when it causes diplopia. The following case is a sample of the optic effect in a case of corneal opacities:

A. K., æt. 10 years, had his right eye burnt by lime in December, 1888. An ulcer followed, resulting in a leucomatous

opacity of the outer portions of the cornea, which was very dense near the periphery, while its more centrally located processes were semi-opaque.

January 19, of the same year, he consulted me on account of seeing everything in a mist. R. E. $V=^{20}/_{cc}$; M 15; Jaeger 11. Prescribed: Pilocarpine in a 1% solution, to be instilled once a day.

January 23, R. E. $V=^{20}/_{LXX}$; M 15; Jaeger 3.

The treatment with pilocarpine has the further advantage, that it may be employed for a long period without the slightest inconvenience, even to the most susceptible conjunctiva.

SOCIETY PROCEEDINGS.

TENTH INTERNATIONAL MEDICAL CONGRESS, BERLIN, 1890.

REGULATIONS AND PROGRAMME.

I. The Tenth International Medical Congress will be opened in Berlin on Monday, August 4, 1890, and will be closed on Saturday, August 9.

II. The Congress shall consist of legally qualified medical men who have inscribed themselves as members, and have paid for their card of membership. Other men of science who interest themselves in the work of the Congress, may be admitted as extraordinary members.

Those who take part in the Congress shall pay a subscription of 20 marks (1£ or \$5), on being enrolled as members. For this sum they shall receive a copy of the Transactions, as soon as they appear. The enrollment shall take place at the beginning of the Congress. Gentlemen may, however, be enrolled as members by sending the amount of the subscription to the Treasurer¹ with their name, professional status and residence appended.

III. The object of the Congress is an exclusively scientific one.

IV. The work of the Congress will be discharged by eighteen different sections. The members shall declare upon enrollment to which section or sections they intend more particularly to attach themselves.

V. The Committee on Organization shall, at the opening sit-

¹Treasurer's address: Dr. M. Bartels, Berlin SW., Leipzigerstrasse 75.—Please to enclose a visiting-card.

ting of the Congress, suggest the election of a definite committee (or bureau) which shall consist of a President, three Vice-Presidents, and of a number—as yet undetermined—of Honorary Presidents and Secretaries.

At the first meeting of each section a President and a certain number of Hon. Presidents shall be elected; these latter shall conduct the business of the sections in turn with the Presidents.

On account of the different languages employed, a suitable number of Secretaries shall be chosen from among the foreign members. The duties of the foreign Secretaries shall be confined to the sittings of the Congress.

After the termination of the Congress the editing of the transactions shall be carried out by a committee appointed for this purpose.

VI. The Congress will assemble daily, either for a general meeting or for the labors of the different sections.

The general meeting will be held between 11 and 12 o'clock, Three such meetings will take place.

The time for the sittings of the various sections will be fixed by the special committee of each section, it being understood, however, that no such sittings are to take place during the hours allotted to the general meetings.

Joint sittings of two or more sections may be held, provided that the bureau of the Congress can offer suitable rooms for such sittings.

VII. The general meeting shall be devoted to:

a. Transactions connected with the work and general management of the Congress.

b. Speeches and communications of general interest.

VIII. Addresses in the general sittings as well as in any extraordinary meetings which may be determined upon only be given by those who have been especially requested by the Committee on Organization.

Proposals relative to the future management of the Congress must be announced to the Committee on Organization before July 1, 1890. The committee shall decide whether these proposals are suitable to be introduced for discussion.

IX. In the sittings of the sections, questions and problems will be discussed, which have been agreed upon by the special Committee on Organization. The communications of those appointed by the committee to report on a subject, shall form the basis of discussion. As far as time allows, the communications or proposals, proceeding from members and sanctioned by the committee on Organization may also be introduced for discussion. The bureau of each section decides as to the acceptance of such offered communications, and as to the order in which they shall come before the meeting, always provided that this point has not been already determined in the sitting itself by a decree of the section.

Scientific questions shall not be put to the vote.

X. Introductory addresses in the sections must as a rule not exceed *twenty minutes in length*. In the discussions no more than *ten minutes* are allowed to each speaker.

XI. All addresses and papers in the general and sectional meetings must be handed over to the Secretaries, in writing, before the end of the sitting. The Editorial Committee shall decide whether—and to what extent—these written contributions shall be included in the printed transactions of the Congress. The members who have taken part in the discussions, will be requested to hand over to the Secretaries, before the end of the day, in writing, the substance of their remarks.

XII. The official languages of all the sittings shall be German, English and French. The regulations, the programme and the agenda for the day will be printed in all three languages.

It will, however, be allowable to make use of other languages than the above for brief remarks, always provided that one of the members present is ready to translate the gist of such remarks into one of the official languages.

XIII. The acting president shall conduct the business of each meeting according to the parliamentary rules generally accepted in deliberative assemblies.

XIV. Medical students, and other persons, ladies and gentlemen, who are not physicians but who take a special interest

in the work or a particular sitting, may be invited by the President or be allowed to attend the sitting by special permission.

XV. Communications of inquiries regarding the business of separate sections. must be addressed to the managing members thereof. All other communications and inquiries must be directed to the General Secretary, Dr. Lassar, Berlin, NW., 19 Karlstarsse.

Committee on Organization of Sections for Ophthalmology: O. Becker, Heidelberg; Eversbusch, Erlangen; v. Hippel, Giesen; Hirschberg Berlin; Leber, Gottingen; Michel, Wurzburg; Schmidt-Rimpler Marburg; Schweigger, Berlin NW., Raonstr. 6; v. Zehender Rostock.

INVITATION TO THE TENTH INTERNATIONAL MEDICAL CONGRESS.

In accordance with the decision of the Ninth Congress at Washington, the Tenth International Medical Congress will be held at Berlin from August 49, to 1890.

By the delegates of the German Medical Faculties and the chief Medical Societies of the German Empire, the undersigned have been appointed members of the General Committee on Organization. A Special Committee on Organization has also been appointed for each of the different sections, to arrange the scientific problems to be discussed at the meetings of the respective sections. An International Medical and Scientific Exhibition will also be held by the Congress.

We have the honor to inform you of the above decisions and at the same time cordially invite your attendance at the Congress. We should esteem it a favor if you would kindly extend this invitation to your friends in medical circles, as way may offer.

We beg to accompany our invitation by a copy of the Statutes and Programme, as also by the list of the intended sections and their Special Committee on Organization.

President.—Dr. Rudolf Virchow; Vice Presidents.—Dr. von Bergmann, Dr. Leyden, Dr. Waldyeyer; Secretary General.—Dr. Lassar. All communications must be directed to the General Secretary, Berlin NW., Karlstrasse 19.

SELECTIONS FROM AMERICAN MEDICAL JOURNALS.

SYMPTOMS OF GRAVE DISEASES OF THE NERVOUS SYSTEM RELIEVED BY RESTORATION OF THE EQUILIBRIUM OF THE EYE MUSCLES.¹

BY J. F. FULTON, PH. D., M.D.,

Professor of Ophthalmology and Otology in the University of Minnesota.

The author of this paper has much more than a professional or scientific interest in this subject; he has a personal interest in it, being a victim of a low grade of myopic astigmatism, which produced considerable insufficiency of the internal recti muscles. This was relieved by careful, correction of the error of refraction and by prolonged systematic exercise which restored the strength of the weak muscle; but this was done after patient treatment, lasting over many months, and the loss of two years' study in college. With our present knowledge the trouble could have been relieved almost instantaneously.

There can be no more interesting study to the physiologist and the practical ophthalmologist than the mechanism of the movements of the eyeball, together with the relationship of its various groups of muscles. The eye is moved in various directions by six small muscles which are supplied by various pairs of nerves.

I do not wish to enter into a theoretical study of the complicated mechanism of the centers which govern the move-

¹Read before the Minnesota Academy of Medicine, January 4, 1890.

ments of the recti muscles except so far as it is necessary to illustrate the subject of this paper. It is well known that the internal recti muscles are supplied by the third, the external recti muscles by the sixth pair of nerves, each originating from a different nucleus. When the two eyes look into the one direction there is, of course, contraction of the external rectus of one eye and the internal rectus of the other; this is brought about by the nucleus of the sixth on the one side and of the third on the other. It requires but a moment's consideration to appreciate the complicated mechanism necessary to bring this about, and the perfect harmony necessary in order that there may be no disturbance of this complicated mechanism.

These so-called recti muscles, while in a certain sense independent of the muscles of accommodation, yet in a very important sense bear a close and inter-dependent relationship. As long as these muscles act in perfect harmony, as long as they retain their physiological strength, the act of vision is without pain and without annoyance, but as soon as one set of muscles obtain the advantage in the way of strength over the other, reflex irritations are produced which result in symptoms as grave and as alarming as any of the organic diseases of the nervous systems.

Our paper to-night introduces a subject which occupies a standpoint between two great specialties, namely ophthalmology and neurology—a subject which, in a certain sense, has become a speciality by itself.

Let us see what we mean by loss of equilibrium. Græfe taught that when the ocular muscles are accurately proportioned in respect to their dynamic conditions, and the performance of binocular vision is accompanied with the least expenditure of energy, the ocular muscles are to be regarded as “in equilibrio.” Loss of equilibrium must be distinguished from strabismus on the one hand and absolute paralysis on the other. The loss of strength with which we intend to deal to-night may be illustrated as follows: In strabismus there is an apparent deviation of the eye in some direction: binocular vision is lost by the vision being suppressed in one eye. In paralysis

of any of the recti muscles, there is an apparent deviation of the eye; binocular vision is lost and diplopia is present. But, in the class of cases of which we treat, binocular vision is habitually maintained by the expenditure of a greater amount of force than is demanded when the muscles are in the equilibrium. This constant effort on the part of the weak eye-muscle to maintain binocular vision, reflexly produces a series of symptoms which may simulate almost any disease of the nervous system, and many of the diseases of the various organs of the body.

It is my purpose to make this paper strictly clinical so I shall only hint at the theoretical parts or the subject. When we take into consideration the constant motion of the eye-ball, we cannot wonder at the fact that occasionally these muscles give out. With every new adjustment of the eye, their relations must be so precisely maintained as to permit the line from the point seen to fall upon the same minute portion of the retina of the eye, that not only the muscles which move the eye-ball, but the muscles of accommodation must act in perfect harmony. This ever changing and extremely accurate association of action is not found elsewhere in the human organism.

The symptoms produced by loss of equilibrium of strength of the eye muscles are as numerous as the leaves of the autumnal woods, but I propose not to describe a general picture of the muscular anomaly known as heterophoria, but to take up the more prominent symptoms which it produces. The first and most important is headache. I have now operated for heterophoria, in some of its forms, two hundred and sixty times. Of this number, one hundred and ninety suffered from headache, In a vast majority of cases the headache was cured; in nearly all, relieved. In some few cases we were in grave doubt as to the cause of the insufficiency. One case I treated in consultation with Dr. Riggs. There was an insufficiency of six degrees of the internal recti. There was a marked hyperæmia of the optic nerve and retina. In this case, which is still under treatment, there is a strong suspicion of cerebral tumor. At any

rate, an operation upon the external recti muscles did not relieve his headache, although it corrected his exophoria. So the statistics which I am able to produce indicate that headache is the most frequent result of this trouble. The pain is very frequently in the occipital region. It may be frontal or it may be confined to the region of the eye. We can certainly say this much, that before any case of headache is treated, the condition of the muscles should be first tested. It has long been known that errors of refraction, in any form, would produce headaches. It will frequently happen that after you have corrected your error of refraction, the eye will still remain uncomfortable; the headaches may be modified, but are not completely relieved until the equilibrium of the strength of the eye muscles is restored.

It has been my privilege to meet with three cases of chorea confined to the muscles of the lids and face, caused by heterophoria. At any rate, a partial tenotomy of one or other of the recti muscles, together with the correction of the refraction trouble, completely relieved the sufferers. They were all children about ten or twelve years of age.

Vertigo is a frequent symptom of loss of balance of strength on the part of the recti muscles. Weir Mitchell says that he has repeatedly known distressing cases of dizziness to be relieved after a careful adjustment of lenses to the eye, but it has been my experience that this is just as frequently due to weak muscles as to error of refraction, the error of refraction probably being a primary trouble.

Mr. W., a prominent business man of St. Paul, found it necessary to give up his business and go to some of the watering places in order to get rid of a constant vertigo from which he suffered. He visited the prominent watering places of Europe consulted some of the best known surgeons of the Continent. An examination showed a very low tendency of one eye downward, and a tenotomy of the inferior rectus completely relieved his trouble, although it had lasted nearly two years, and he has continued well now for more than a year.

It is well known that Dr. Stevens, of New York, claims to

have cured cases of epilepsy by means of restoring the equilibrium of strength of the eye muscles. With this subject I have had no personal experience. In several cases detailed by that author, complete cessation of the epileptic fits took place, while in other cases the cure was not absolute, but considerable amendment ensued.

Wigleworth, of the Rainhill Asylum of England, and Bickerton, the oculist of Liverpool, have taken up the same subject and arrived at the same conclusions as those of Dr. Stevens.

It is a well known fact that a large proportion of epileptics have errors of refraction, and it seems to justify us in the assumption that certain cases of epilepsy do occur in which the attack is induced by an undue strain upon the muscular apparatus of the eye, by reason of an abnormality of refraction.

Neurasthenia is very frequently caused by imperfect action of the muscles. The most remarkable cases of this kind came under my observation during the past few months. Mr. G., a man of forty years of age, a hard working and active business man, was taken down by the most pronounced symptoms of exhaustion, fatigue and a general "played out" condition as he expressed it. He was examined (and you can judge was determined to get well by the number and character of men whom he consulted); by such prominent men as Weir Mitchell of Philadelphia, Seguin, of New York, Hughlings-Jackson, of London, and Charcot, of Paris. They all agreed in pronouncing it bad case of neurasthenia and followed out about the same line of treatment. He obtained little or no relief. About a year ago, while in New York, he had some trouble with his eyes and was referred to Dr. Webster. Dr. Webster found myopic astigmatism of one eye and mixed astigmatism of the other. He also found a high degree of esophoria, together with hyperophoria, which he corrected by combining with the cylinders a No. 4 prism with the base out, and a No. 1 prism with the base down. This partly relieved his neurasthenia and his distressing headache, but only partly. He did not have time to have an operation performed in New York, but cam

to my office for that purpose about three months afterward. A free tenotomy of the internal rectus muscle of one eye was performed, and a graduated tenotomy of the superior rectus of the other eye. After this healed it was found that there were still about three degrees of esophoria remaining. This was corrected by doing a graduated tenotomy upon the internal rectus muscle of the same eye upon which the graduated tenotomy of the superior rectus was done. This completely relieved his trouble; he had no more headache, his neurasthenia immediately began to improve: his mental condition became much better, and for the first time in many years he was able to work without a feeling of exhaustion and discomfort.

That the irritation may extend farther than the brain and the meninges is proved by the following case: Mr. D., æt. 43 years, came to my office to be fitted with glasses to read with. He told me that he had not read for many years, because every time he attempted to do so there was a feeling of weakness of the spine, which was very annoying; he feared organic disease of that part of the body. In the course of the examination it was found that he had seven degrees of weakness of the external rectus muscle. We told him that we could not promise for a certainty, but that the trouble with his spine might be dependent upon the trouble with his eyes. He has now been under my treatment for more than a year. A graduated tenotomy of both internal recti muscles has had the effect of completely removing the sensation of weakness of the spine, as well as of greatly improving his general health.

We occasionally meet with cases of apparent hemi-anæsthesia, which seem to be due to the same trouble. How it is produced I shall not attempt to explain; I am simply familiar with the clinical fact.

About two years ago, Dr. Riggs sent a well-known gentleman of this city to me, with a feeling of numbness over one side of the body. He was much depressed; feared an attack of paralysis. This extended over the whole left side of the body, the tongue as well as the arm, hand, leg and foot. He had myopia of the right eye. This was carefully corrected,

and, later on, the insufficiency of the muscle was corrected, after which he obtained relief; the symptoms entirely disappeared. So anxious was he about this condition of affairs that he went to Chicago to consult Dr. Jewell, who told him that it might be dependent upon the condition of his eye.

Certainly nothing could be more remarkable than the following case, which has been kindly furnished me by Dr. Jones, the accuracy of which will be verified by a number of the physicians of our city:

JOHN F. FULTON, M.D., *Dear Doctor*:—"I willingly comply with your request for a report of the case referred to. Mr. M., æt. 28 years, a native of New Jersey, has resided in Minnesota for twelve years. He is a writer of considerable literary finish and is on the staff of one of our daily newspapers. He first came under my observation about one year ago, for acute cystitis, caused by a tight stricture in the membranous portion of the urethra, but declined on operation until after his marriage which took place shortly afterward. He denied ever having had syphilis, and had a good personal and family history, except gonorrhœa, which caused the stricture referred to.

"About six months ago I was called to see him at night and found his wife greatly agitated over his condition. He was in a semi-comatose condition, with widely dilated pupils, and was breathing stertorously. After a careful examination, opoplexy, uræmia, alcoholic or opium toxæmia were excluded. When rather roughly shaken he could be aroused and would give fairly intelligent answers to questions, but his speech was stuttering and stammering, and the wrong words were frequently used to express his ideas. He complained of a loss of sensation of the right half of the body and tingling of the tongue and lips of the same side, together with great confusion of ideas. There was some disorder but no paralysis of motion. After his recovery he was frequently under observation and a careful investigation of his case was undertaken. He suffered somewhat from pyrosis and heartburn. Examination of his heart, lungs, kidneys, etc., yielded negative results. He frequently experienced a severe pain over, and sometimes in, the

eye of one side, which was invariably accompanied or followed by nausea or vomiting (migraine). He was myopic, for which he had long worn glasses. He told me that for several years he had been occasionally subject to sudden attacks of numbness of the right side of the body, the palate, tongue and lips of the same side, which was attended by strange speech disturbances, together with disorders of ideation and volition. If the attacks were mild, he merely misplaced his words or used wrong words while speaking. If an attack was unusually severe, he experienced complete aphasia, which, however, was only temporary. He had both diplopia and hemiopia. Thus while attending a game of baseball, part of the time he could only discern that half of the player's body above the belt, while a few minutes afterward only that half below the belt. In numerous other ways was this hemiopia shown.

"During the intervals of his attacks he enjoyed good health, and there was apparently no deterioration of intellect or loss of memory. The attacks came on suddenly with disorder of vision, vertigo, nausea, right-sided numbness and partial or complete aphasia. During the attacks, pins or needles thrust into the right side of the body caused no pain. Tactile sensibility was notably diminished. Sometime ago he was carried out of a crowded theatre in Minneapolis in the midst of a performance; on reaching the sidewalk he was unable to tell the hackman the street and number of his residence. He could understand what was said to him, and the preservation of his intelligence was shown by the expressive signs and gestures he made in lieu of articulate language. He knew the words he wanted to speak but was unable to utter them. This inability to speak was not owing to a loss of co-ordination of the muscles involved in speech, or to paralysis of the same, but was rather that variety of ataxic aphasia in which there is a loss of the power to use words expressive of ideas, and a loss of the faculty of calling surrounding objects by name or telling the own name to acquaintances.

"The more the case was studied the greater became my conviction that the patient was suffering from a grave intra-cranial

lesion of an obscure nature. His sudden attacks of partial unconsciousness, the vertigo, the numbness of the entire right half of the body, amounting to hemi-anæsthesia, the speech disorders or complete aphasia, the diminished tactile sensibility, diplopia and hemiopia all pointed, I thought, to a cerebral disorder, whose apparent location or site was in the left frontal convolution, or that region connecting it with the island of Reil, and with the central and parietal convolutions. While at my wits' end as to diagnosis, your opinion was sought concerning the significance of various disorders of vision which were such prominent features of the case. After an examination, you expressed the belief that the whole trouble was due simply to errors of refraction and could be cured by treatment directed to that condition. Though myself skeptical of any improvement taking place from such a line of treatment, and thinking you took a too optimistic view of the case, subsequent events demonstrated the correctness of your conclusions, as a year has now elapsed since the patient left your hands and he has had no return of his disorder, and continues his literary employment with an unimpaired intellect. Very truly yours,

TALBOT JONES."

A word may be said, in closing this paper, about my mode of operating. It is very simple and chiefly the same as recommended by Dr. Stevens, of New York. I use his instruments, which consist of a delicate pair of scissors, a very small hook and delicate fixation forceps. I rarely, however, use the hook except in extreme cases. I first take up the conjunctiva with the fixation forceps and make an opening in this membrane immediately over the insertion of the muscle upon which I wish to operate. The fibres of the muscle are then picked up with the fixation forceps and cut off very close to the eye-ball. Thus a hole is made through the tendon of the muscle. This is done in a dark room with an assistant throwing a focus of light upon the eye by means of a large lens, the operating chair being placed twenty feet from the candle, and the frames with the prism in it at hand, so as to produce diplopia and judge of the amount of correction necessary. Fibre after fibre

is thus cut until one candle comes over the other, or they are brought upon a level, as we require. In this way, a perfectly accurate adjustment can be obtained, and we can correct just as much or little as we wish. The patients go forth to their work immediately after the operation, as though nothing had been done, and the relief in nearly all cases is immediate. The question is often asked, "How much insufficiency is it necessary to have in order to perform an operation?" My answer is, any amount that produces serious annoyance to the patient. One-half degree of insufficiency of the internal recti, in one person, may give rise to the most alarming symptoms, while eight or ten degrees in another will scarcely be noticed. So we are not guided by the amount of insufficiency, but by the amount of trouble which it produces.

Dr. Seguin remarked, in a conversation with a private patient of mine, that he had noticed the influence of insufficiency of the eye muscles as a factor in the production of nervous diseases, long before Dr. Stevens drew the attention of the profession to this subject. Dr. Agnew, in a private conversation with me, said that he had met cases in which maintenance of binocular vision was so annoying to the patient that he considered it justifiable to perform a free tenotomy of the internal rectus muscle and let one eye go, as he expressed it. He, like many other prominent oculists of his day, did not believe in the efficacy of a graduated tenotomy. I had been in the habit of performing what I call partial tenotomy long before Dr. Stevens described his so-called graduated tenotomy, and had succeeded in relieving many cases after glasses or prisms had failed to give relief. If anyone should be skeptical as to the results published in this paper, I shall be only too glad to have them go over my book with me, or to meet personally patients themselves, the addresses of all of whom I have kept, and shall be glad to have any of my professional friends meet them.

One of the most remarkable cases was that of a lady from Fargo, a patient of Dr. Darrow, and who from her earliest youth had been the victim of the most fearful and agonizing

headaches. The cause of her headache was a six degree insufficiency of the internal recti muscle. Two weeks after a tenotomy of the externi she wrote me, saying: "Doctor, you have cut the headache string, I have had no headache since the operation; the first two weeks of comfort that I have enjoyed during my life."

It will thus be noticed that headache, varying in intensity from that which is simply annoying to that which is beyond control and requires the use of an anæsthetic or powerful anodyne to give relief, is the most frequent symptom of loss of equilibrium of strength of the eye muscles. It is well known that it is a frequent symptom of various forms of eye trouble. Dr. Gould, of Philadelphia, noted 312 cases of headache out of 500 patients, in private practice. Vertigo is the next most common. The other grave symptoms can only be classed among the rare.

In closing this paper I should not forget to observe the influence of eye strain upon the disposition and the emotions, ably expressed by another writer in the following sentence: "The most frequent method in which eye strain acts disastrously upon the developing personality, is in making study and literary labor so irksome that the mind is slowly but irrevocably turned from intellectual pursuits and directed to physical activities for outlets of its energy." Irritability of temper, lack of self-control, unbounded impatience are frequent symptoms noted in these cases.

Upon this subject I am well aware that there is some skepticism, but remember the bias of prejudice is quite as harmful to scientific progress as the bias of enthusiasm. I simply maintain that a large number of cases of suffering humanity can be relieved of the gravest symptoms of nervous disorders by a simple and skillfully performed tenotomy of the recti muscles, resulting in the restoration of the equilibrium of strength of these delicate structures.

My conclusions are exactly those of Dr. Webster, viz: (1) No person should have a tenotomy performed *solely* because he is the subject of heterophoria. (2) But slight degrees should

be corrected where troublesome symptoms exist which may be due to the too great use of nervous force in co-ordinating the eyes. (3) Other means should be resorted to before trying tenotomy, but unnecessary delays should be avoided. (4) Tenotomies should be performed under cocaine. (5) In judiciously selected cases, where the operation is properly performed, the average results will be quite as satisfactory as the results of most other surgical operations.—*Northwestern Lancet.*

NEWS.

AN OPHTHALMOLOGICAL society has been organized in Kansas City. Those interested in the formation of such a body recently met at the office of Dr. J. H. Thompson and perfected the arrangements necessary. It is to be known as the Kansas City Ophthalmological Society. The officers are: President, Dr. B. E. Fryer; Secretary, Dr. J. H. Thompson. Meetings will be held every second month, time and place to be announced by the officers. The charter members are: Drs. B. E. Fryer, J. H. Thompson, W. C. Tyree, F. B. Tiffany, J. W. Parker and Leroy Dibble, of Kansas City; J. E. Minney, of Topeka, and Barton Pitts of St. Joseph. It is unfortunate that a rule has been established excluding from membership all physicians who do not practise ophthalmology (and otology) exclusively. There are a number of men in the city who have a very considerable knowledge of diseases of the eye, who would be an honor to the society if enrolled among its members. Besides, ophthalmoscopy is becoming so important an element in differential diagnosis that men in general medicine must soon know the eye about as thoroughly as the "specialist," in order to keep abreast of the advances in clinical medicine. Other ophthalmological societies have members who are not specialists—thus Hughlings Jackson is president of the Ophthalmological Society of the United Kingdom; while he is eminent in neurology, he is but a plain, "common doctor"—physician to the London Hospital, yet his recent presidential address, "Ophthalmology and General Medicine," is one of the finest pieces of composition in modern literature.

IN THE election of Dr. B. E. Fryer as presiding officer of the society, the members obtained an efficient officer, but at the

same time they performed an act which will do more toward securing recognition of the society both at home and abroad than any other one thing which could have been done. It was an admirable stroke of policy, though perhaps an unconscious one, while at the same time it conveyed the deserved and intended honor. By continuous association through a very long period of years with the most prominent ophthalmologists of America, and indeed of the world, the present president of the society has become more widely known, perhaps, than any man in the West. And besides, his long connection with the United States army has created a feeling of brotherly interest which extends through the land. For the army surgeon is a peculiar one—peculiar in many respects; he is, first of all, a highly educated man—he must be, in order to secure his position; then he is a polished gentleman—his leisure, his surroundings, his associates necessitate it; he is friendly with his brother-surgeons—he learns to know them, to respect them, and in many instances to love them; he has a feeling of kinship for them all; and, above all, he is jealous of the reputation and honor of every one of his associates; to speak ill of one army surgeon is to defame all, provided the man in question be in good repute. With, therefore, all of these circumstances in his favor, widely known, popular everywhere and respected by all, the Kansas City Ophthalmological Society may well feel proud of its first president.—*Kansas City Medical Index.*

CORRESPONDENCE.

The Ophthalmic Review begins its new volume with an American editor, Dr. Edward Jackson, of Philadelphia, who succeeds Dr. James Anderson, of London. It will hereafter contain original articles from American as well as English ophthalmic surgeons, with notices of all ophthalmological papers published here or abroad, and full reviews of the more important of them.

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NOTES OF TWO CASES OF SQUINT AND ONE OF
ESOPHORIA, DUE TO ANISOMETROPIA, IN
WHICH THE MUSCULAR ANOMALIES
WERE CURED BY GLASSES; ALSO
OF A CASE OF ESOPHORIA OF
UNUSUAL DEGREE.¹

BY SAMUEL THEOBALD, M. D.,

Surgeon to the Baltimore Eye, Ear and Throat Charity Hospital, Ophthalmic and
Aural Surgeon to the Johns Hopkins Hospital Dispensary.

The cases of concomitant squint which may be cured by means of glasses are, comparatively speaking, rare, and bear but a small proportion to those which can be corrected only by operative treatment. In my experience they belong almost always to one of two classes—either they are squints which are not yet fully formed, being intermittent in character, occurring only during tension of accommodation, or they are squints that usually have been long established, but which, owing, probably, to a decline in the relative strength of internal or external recti muscles, as the case may be, have already shown a tendency to lessen in extent. The existence of ani-

¹A paper read before the Johns Hopkins Hospital Medical Society, Dec. 2, 1889.

sometropia of considerable degree may also be regarded as a circumstance favorable to the non-operative correction of squint, because, as I have heretofore pointed out,¹ the squinting eye under such circumstances is less apt to become amblyopic than when the refraction of the two eyes is the same, since the necessarily indistinct image which its retina receives gives rise to less confusion, and is, therefore, not so apt to be mentally suppressed. The not infrequent habit of anisometropic individuals of using one eye in near and the other in distant vision also tends to a like result. But, besides this, a new and powerful stimulus to binocular fixation is supplied when, by the aid of glasses, images of equal distinctness are projected upon both retinae. In the three following cases the good results which followed so promptly upon the adjustment of glasses must be ascribed in a great measure, I think, to this latter agency.

CASE I.—Miss W., æt. about about 30 years, complained of persistent asthenopia; exhibited in distant vision a slight convergent squint of the right eye, which defect had been observed for some years. In near vision, however, she was found to depend entirely upon the right eye, holding the page, in reading, at a very short distance. With this eye she could read J. No. 1 easily, but could do so with the left eye only by a considerable effort. Upon examination, compound hypermetropic astigmatism, against the rule, was found to be present in the left eye; compound myopic astigmatism, against the rule, in the right eye.

For distant vision glasses, which fully corrected the total defect of each eye, were prescribed, as follows:

Left eye, $+1/24$ s = $-1/48$ c. ax. 90° .

Right eye, $-1/12$ s = $-1/48$ c. ax. 95° .

For near vision the myopia of the right eye was only partially corrected, and the hypermetropia of the left eye sufficiently over-corrected to make the far point of each the same.

¹The amblyopia of squinting eyes: Is it a determining cause or a consequence of the squint? Transactions of the American Ophthalmological Society, 1886, and the Medical News, September 4, 1886.

These gave at once binocular fixation in near vision; but in distant vision the fixation was still only with the left eye, the right, as before, squinting slightly inward. The glasses, however, were worn systematically, and within a few weeks the squint had entirely disappeared, and careful testing at this time, and six months later, showed binocular fixation in distant, as well as in near vision.

CASE II.—Mrs. M., æt. 42 years, had a very decided divergent squint of the left eye. In distant vision it was of high grade, in near vision variable in degree, occasionally disappearing entirely, so that she would, at times, obtain momentary binocular fixation. In the non-squinting right eye a simple myopic astigmatism was discovered, requiring for its correction $-1/42$ c. ax. 80° ; in the left eye, a simple hypermetropic astigmatism, corrected by $+1/12$ c. ax. 40° . As she was not able to fuse the retinal images of a light placed at a distance of 20' until prisms amounting in the aggregate to 52° (bases in) had been placed before the eyes, I had little hope that binocular vision for distance would be restored without a tenotomy of the external rectus of one or both eyes, and still less that, if restored, it would be unattended by muscular asthenopia. However, as she was averse to an operation, if it could possibly be avoided, and as the tests for muscular insufficiency gave, for the reading distance, most contradictory results, I simply prescribed the lenses which I have mentioned, directing that they be tried for near as well as for distant vision, my expectation being that in near vision they would probably restore binocular fixation, while in distant vision they would simply correct the astigmatism of the fixing eye, and thus relieve the asthenopic symptoms. To my surprise, when the patient reported a week later, after having worn the glasses but four or five days, I found that with them she had binocular fixation both in distant and in near vision, and, what was more surprising still, was, in distant vision, entirely free from asthenopia. Two months later this condition was maintained, and she reported the glasses as very satisfactory in distant, but not so comfortable in near vision. I then prescribed for reading

and sewing the same cylinders which I had previously ordered combined with $+1/36$ s., and these gave her entire satisfaction.

CASE III.—Dr. M., æt. about 30 years, engaged in teaching, applied to me because of troublesome asthenopia. He was found to have compound myopic astigmatism in each eye, with well-marked anisometropia, the astigmatism being of low grade and equal in the two eyes, the myopia being nearly three times as great in one eye as in the other. The Graefe test, with the ametropia uncorrected, showed esophoria, or insufficiency of the external recti muscles, at 20' of 5° ; with the myopia and astigmatism corrected this was increased to $6\frac{1}{2}^\circ$. There was also left hyperphoria of 1° to $1\frac{1}{2}^\circ$. Although there was no squint and evidently binocular fixation, he depended chiefly upon his less myopic, left eye, in both distant and near vision, using his accommodation so as to obtain in it the distinct retinal image. Glasses for constant use were prescribed as follows:

L. eye $-1/72$ s. = $-1/144$ c. ax. 135° \bigcirc Prism 2° base out.

R. eye $-1/20$ s. = $-1/144$ c. ax. 45° .

These gave V. = $20/xx$ — and No. 1, and soon relieved his asthenopia.

The interest of the case, however, resides in the fact that an examination, made after the glasses had been worn with satisfaction for five months, showed that the insufficiency of the externi had almost entirely disappeared. Indeed, the Graefe test, at 20', with the ametropia corrected, at times gave no insufficiency whatever, though occasionally an esophoria of 1° to $1\frac{1}{2}^\circ$ would manifest itself, the same test, under like conditions, having shown at the time the glasses were prescribed, as I have stated, $6\frac{1}{2}^\circ$ of esophoria. The patient was then comfortable with his glasses, and I did not deem it wise to make any change in them; but I told him it might soon become necessary to take away the prism which had been placed before the left eye. Shortly after this he left the city to accept a position at Bowdoin College, Maine, and not long afterwards finding his eyes less comfortable he visited, at my sug-

gestion, Dr. E. E. Holt, of Portland, who found the relative strength of the external recti muscles so changed as to induce him to reverse the position of the lens which I had given for the left eye, so as to place the base of the prism in; and, at last accounts, this change seemed to have been of advantage.

The following case is of interest only as showing how high a grade of esophoria may exist in exceptional instances without the development of squint, this feature of the case being the more remarkable in view of the fact that the eyes, as will be seen, were appreciably different in focus.

CASE IV.—Mrs. L., æt. 51 years, complained of headaches, asthenopia and poor vision. Both optic discs were found to be very hyperæmic, and well-marked choroid-retinal changes were discovered in the lower part of the fundus of each eye. She was using as reading glasses, $+1/12$ s., but had never worn any glasses in distant vision. With the cover test the excluded eye squinted strongly inward in both distant and near fixation, but a rapid movement of correction followed as soon as the eye was uncovered. With the ametropia uncorrected (as in distant vision it always had been) the Graefe test showed at 20' between 23° and 24° of esophoria, and at 13'', 12° . She was found to have compound hypermetropic astigmatism, against the rule, with anisometropia, and glasses were prescribed for distant vision as follows:

L. eye, $+1/7$ s. = $-1/15$ c. ax. 90° .

R. eye, $+1/9$ s. = $-1/24$ c. ax. 85° .

With these $V. = 20/xx$ was obtained, and the esophoria, with the test object at 20', was reduced to 4° . For near vision the same cylinders were combined with $+1/5.5$ s. for the left eye, and $+1/6.5$ s. for the right, which enabled her to read J. No. with ease. When the patient was last seen a sufficient time had not elapsed to enable me to judge of the effect of the glasses, but they gave promise of affording the relief which I anticipated from them.

A CASE OF SARCOMA OF THE IRIS IN A CHILD TWO YEARS OLD.

BY ADOLF ALT, M. D.

A. S., æt. 2 years, the daughter of healthy parents, was brought to my office on January 6, on account of an affection of the right eye of apparently a little more than four weeks' standing. She had been under the treatment of the family physician who now transferred her to me. According to the father's account the child had always been well until within about six months, when she began to scream out in the night and otherwise to sleep restlessly.

Status præsens.—R. E., has a dull appearance. There is barely a roseate tinge in the neighborhood of the corneoscleral junction. The very small pupil is bound down to a cataractous lens. The chief interest is centred on the condition of the iris. This membrane has a nodulated, swollen appearance, and, although the anterior chamber seems in consequence shallow, it is possible to see into the depth of the iris tissue, as if its anterior layers were of a gelatinous character. There are a number of nodules; two especially large ones lie in the lower outer quadrant. Tension is normal. The incisors are notched, but I fail to detect any swollen glands. L. E., normal.

My first thought was that I had to deal with an iritis due to congenital syphilis. My inquiry, however, led to absolutely negative results. I have since heard from the family physician, that the mother had four healthy grown children by the first husband, while of four children with the present, her second, husband, who is a picture of health and manly strength, two died early, and one was still-born. This last named one

had a large tumor on the left side of the head and neck which, however, was never examined histologically.

In spite of all assurances, and appearances to the contrary, I prescribed mercurials, and instillations of atropine, and kept the child under observation.

This treatment had no visible influence whatever on the child's eye affection.

In the following weeks the swelling of the iris increased, and the tension remained normal, until one day the largest nodules in the iris showed evidences of parenchymatous hæmorrhage. Still, although I had hinted to the father, that we might have to deal with an intraocular growth, I did not yet feel warranted in urging the enucleation of the eye, awaiting a more decided increase of tension. All this time I thought, that I had probably to do with a glioma of the retina.

On January 20, the little patient was again brought to see me after a particularly restless night. There was now considerably more episcleral injection and there were two staphylo-matous elevations of the scleral tissue in the ciliary region at the nasal side of the eyeball, that is, opposite to the largest nodules in the iris. The swollen and nodulated iris still had that gelatinous, semi-transparent appearance mentioned above.
+T2.

These conditions now prompted me to urge immediate enucleation, as I felt certain I had to deal with a glioma, which had invaded the iris and was getting ready to break through the sclerotic. The parents at once consented, and on the 21st of the same month the enucleation was made. The operation, and the healing process after it, passed off as usual.

After proper hardening I divided the eyeball in two and saw to my astonishment, that, instead of being the seat of a glioma, the retina was perfectly normal.

The new formation concerned almost exclusively the iris; the ectatic portions which had been seen in the sclerotic, were not caused by the spreading of the tumor into this membrane, but were evidently solely due to the increased pressure which acted upon inflamed sclerotic tissue.

On microscopical examination the tumor which involved the whole of the iris and was nodulated, was found to be a round-cell sarcoma. It had evidently had its origin in the loose parenchymatous tissue of this membrane, and was as yet bounded backward by the partly destroyed uveal layer and forward by the dense connective tissue forming the anterior layer of the iris. The latter perhaps explains the semi-transparency of the tumor.

SOME EYE-AFFECTIONS SEEN AS SEQUELÆ OF THE GRIPPE.

BY ADOLF ALT, M. D.

Although the grippe has hardly been as severe in St. Louis as it has appeared in other cities, the number of its victims has been very large.

In a limited number of cases I have had occasion to see eye-symptoms which came on during the period of convalescence from the grippe, and for which the grippe was the only known cause.

The simplest affection was a hyperæmia of both the bulbar and the palpebral conjunctiva combined with slight chemosis. The condition usually came on over night and disappeared without interference after two or three days.

A more serious affection was an acute conjunctivitis with chemosis and œdema of the lids to such an extent, that when I saw the first case of this kind I surely thought I had to deal with a gonorrhœal infection. This affection also came on during the night, the patients getting up in the morning with a red, swollen and painful eye. Strange to say, although the upper lid was the seat of an enormous œdema, the chemosis and hyperæmia of the conjunctiva was much worse in the lower half of the eyeball. In some cases small hæmorrhages took place in the subconjunctival or episcleral tissue, similar to what we see in gonorrhœal conjunctivitis. The affection, however, differed very materially from gonorrhœa, as there was hardly any discharge and but little discomfort. Ice applications and the frequent instillation of a solution of bichloride of mercury, quickly reduced the symptoms. No serious complications have come under my observation.

In one instance a gentleman called upon me after having gone through a severe attack of the grippe, on account of "partial blindness." The patient was very weak and labored under an extreme degree of lassitude. On ophthalmoscopic examination I found ischæmia of the retinae as the cause of his visual trouble. With proper stimulation he soon improved and got well.

In the last case I have seen, an insufficiency of the internal recti muscles was developed after an attack of the grippe of unusual fierceness. The patient, a lady, æt. 37 years, positively asserts, that she has never had any of the attending symptoms before having fallen a victim to the epidemic.

TRANSLATION.

OZÆNA AND THE INFECTIOUS ULCERS OF THE CORNEA.

BY DR. E. VON MILLINGEN, CONSTANTINOPEL.

When reading the observation of Dr. Trousseau, in the *Archives d'Ophtalmologie*, 1889, p. 270, I was reminded of having often seen affections of the eye which I also attributed to the presence of ozæna. I have often taken occasion to present such cases before the students in my clinic; moreover, in a paper of one of my assistants, Dr. Ternan (*Ophthalmic Review*, May, 1889, p. 129), may be found the description of the procedures I employ in cases of keratitis accompanying trachoma and complicated with ozæna.

Mr. Trousseau's interesting article has encouraged me to extract from my journal all the notes of cases of keratitis, caused by ozæna or chronic atrophic rhinitis, which I have observed since 1880. An analysis of these cases prompts the following remarks:

All cases of keratitis ulcerosa which occur in a patient suffering from ozæna have an irregular course and prove very rebellious to the ordinary modes of treatment. I think it is certain that there are distinct forms of conjunctivitis and keratitis which only occur in subjects suffering from ozæna.

The conjunctivitis which accompanies ozæna is distinguished by its very chronic character, and by the inefficacy of the local remedies applied in order to cure it; there is seldom an abundance of discharge; there is rather a hyperæmia of the ocular and palpebral conjunctiva; mostly there is increased lachrymation and excoriations in the angles of the palpebral fissure; there is more or less discomfort and conjunctival asthenopia. The ocular conjunctiva is from time to time the seat of acute phlyctænulæ, which are often infiltrated and complicated with episcleritis. These phlyctænulæ appear mostly on

the limbus corneæ, and are not slow in encroaching upon the cornea itself. They are from the beginning large, elevated above the tissue in which they start (*ulcus elevatum*), and going over into suppuration they form more or less deep and destructive ulcers.

The pressure of the finger exerted through the lid upon such a phlyctænula in the progressive stage gives the patient considerable pain, which is shown by the rapidity with which he retracts his head. Aside from this pain on pressure, the patients complain of severe periorbital pains. It is just this very acute character which is but rarely wanting when we have to deal with phlyctænulæ caused by *ozæna*. They are very rapidly reproduced and follow each other in a manner that renders them a continued source of suffering to the patient.

The phlyctænulæ leave their traces on the limbus of the cornea in the shape of small white points of fine linear streaks resembling the very fine delicate scars which are produced by a slight traumatism, like an abrasion.

The ocular conjunctiva near the limbus loses its transparency in old cases, especially where there has been a series of confluent phlyctænulæ.

The corneal ulcers caused by *ozæna* lie by predilection upon or near the limbus corneæ, and have the tendency to perforate the cornea, and to cause prolapse of the iris.

The cases of panniform ulcerating or simple keratitis which accompany trachoma are much more rebellious to treatment when they are combined with putrid *ozæna*; the treatment of the nose cannot be dispensed with in order to cure these cases.

Dr. Trousseau thinks it possible that after cataract extraction the flap might become infected in patients suffering from *ozæna*. I should like to relate here a case of partial suppuration of the flap after extraction in a patient suffering from *ozæna*, and who certainly would have lost the eye totally if the danger had not been recognized in time. The case was that of a Turk called Hassan, æt. 45 years, very strong and in the best condition to be operated upon with success for cataract in both eyes. Since in this patient the *ozæna* was not diagnosed when he entered the clinic, the left eye was operated

upon on October 15, 1888, by von Graefe's method. The conjunctival sac and the eye were disinfected before and after the operation by a sublimate solution of 1 in 5,000.

The instruments were immersed in boiling water, and the eye was bandaged with sublimated cotton. The operation was performed under cocaine anæsthesia (cocaine dissolved in a sublimate solution of 1:5,000), and was in no way abnormal; the pupillary area was easily and totally cleansed from cortical substance, so that I did not look for anything but a rapid and perfect healing. This, however, was not the case. The first visit on the next day after the operation I found a mass of discharge on the cotton; the lids and the ocular conjunctiva were slightly œdematous; the cornea had lost its lustre all over its surface, was "punctuated" as in diffuse keratitis, and traversed here and there by vertical stripes (keratitis in stripes). The pupil was yet sufficiently visible to make sure there were no synechiæ and a good dilatation. The conjunctival flap was swollen, yellowish and looked croupous. In its neighborhood and all along it, the cornea was infiltrated, and showed all the signs of the beginning of an infectious suppurative keratitis, which promised to progress rapidly.

My astonishment at this pitiful condition of things found a sufficient explanation when, on approaching the patient, I perceived the characteristic smell of ozæna. The patient was carried to the operating room, and after having cocainized the eye, I ran the galvano-cauter over the whole course of the wound. The conjunctival flap was totally destroyed, and I pushed the point of the instrument as deeply as possible in between the lamellæ of the cornea, which were already affected by suppuration. Then I disinfected the eye and the nasal cavity by sublimate irrigation.

October 17.—Cornea in the same condition; the infiltration has in no way progressed. Less discharge, less œdema. The anterior chamber is refilled.

October 18.—The cornea is beginning to clear up. The progress of suppuration is entirely arrested. The irrigation of eye and nose continued. Atropine.

October 22.—The bandage is removed.

October 28.—No irritation; the cornea looks still dull, and the vertical stripes can still be seen.

November 1.— $V.=^2/LX$.

December 1.— $V.=^4/LX$.

On March 20, 1889, I operated on the right eye, after antiseptic treatment of the nasal cavity, with perfect success.

It is well known that the lachrymal ducts are often affected in consequence of ozæna, and I would like to refer here to the atrophy of the mucous membrane of the lachrymal drainage apparatus found in patients suffering from very chronic ozæna, in which the sac becomes quite large and filled with air, although there is no obstruction of the lachrymal duct. When the sac is pressed upon a crepitating noise is perceived, and bubbles of air escape through the canaliculi.

It seems that the atrophy of the mucous membrane of the nasal cavity extends through to the lachrymal sac. The patients do not seem to suffer from this condition.

In certain patients suffering from ozæna, when there is no organic lesion of the eye and its annexes, and no error of refraction (especially in females), I have observed a very disagreeable asthenopia which rendered reading and needle-work impossible. This asthenopia, which had lasted for a long time and could not be improved by any treatment, disappeared as by magic as soon as the patients had their nasal cavity treated by abundant irrigations with lukewarm solutions of sublimate 1:10,000. All of these patients suffered from very fetid ozæna, with dryness of the vault of the pharynx, and hoarseness.

I came to the following conclusions:

1. Ozæna is often the cause of diseases of the lachrymal drainage apparatus.
2. Ozæna is very frequently the cause of characteristic affections of the conjunctiva and cornea.
3. Ozæna may cause suppuration of the flap after cataract extraction, and in consequence the patients, before being operated on, should be submitted to an examination of the nasal passages.

(Here follow the data of 33 cases.)

SOCIETY PROCEEDINGS.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Stated meeting, Thursday, January, 1890, J. Hughlings Jackson, M.D., F.R.S., President, in the chair.

Glaucoma after Extraction of Cataract.—Mr. Treacher Collins read this paper, in which he described the conditions found in ten eyeballs excised after sight had been destroyed, and which he had examined microscopically. In nine cases the cataract was the ordinary senile form; in one case it was of traumatic origin. Five of the patients had undergone successful operation for cataract. The interval which elapsed between the extraction and the onset of the glaucoma varied from three to twenty-one months. In three cases the increase of tension came on simultaneously with iritis and keratitis punctata, and in these patients the second eye became affected with sympathetic ophthalmitis. In nine of the eyes there was adhesion of the lens capsule to the extraction scar; in the remaining one, in which the lens had been removed in its capsule, the hyaloid was adherent to the corneal cicatrix. In all the specimens the angle of the anterior chamber in the part corresponding to the coloboma of the iridectomy was blocked, either by adhesion of the root of the iris, which had been left, or by the tips of the ciliary processes, dragged forwards by entangled lens capsule. After enumeration and discussion of the various causes to which glaucoma after extraction might be ascribed, Mr. Collins said he thought, from the study of these cases, that the adhesion of the lens capsule to the corneal cicatrix strongly predisposed the eye to an attack of glaucoma; in some cases this

adhesion, combined with an entanglement of iris, was sufficient to set up glaucoma; in others some additional irritation was necessary, such as resulted from a discission operation. The treatment of these cases was, in his experience, very unsatisfactory. In only one he had seen the glaucoma permanently relieved by operation; in that case iridectomy and capsulotomy were performed after paracentesis of the anterior chamber had failed to relieve tension. Mr. Collins exhibited microscopic specimens of the eyeballs, and showed some excellent magic lantern slides made from photographs of microscopic sections.

MR. CRITCHETT said the needle of discission of the capsule after cataract extraction should be graduated, so as not to allow the escape of aqueous humour. Many eyes were undoubtedly lost after cataract extraction, but that they should be destroyed by glaucoma was to him surprising, seeing that such cases should be under the direct observation of the operator, so that the condition ought to be at once relieved.

MR. PRIESTLEY SMITH said that Mr. Collins' paper was of much value, as it supplied accurate anatomical information on the subject with which it dealt. He regarded these cases as belonging to the category of secondary glaucoma. In primary glaucoma he was accustomed to regard the lens as taking a very prominent part, but the occurrence of the condition in the absence of a lens was against that view. He alluded to one class of cases not included in this series—namely, glaucoma after successful needling operations, in which there was a clear central pupil with no visible adhesions, yet *iris bombée* occurred, no doubt on account of adhesions between the lens capsule and iris. In cases such as Mr. Collins described, sclerotomy was effectual if care was taken to divide the septum between the vitreous and aqueous chambers. In a case where sclerotomy was succeeded by but slight escape of fluid, a second incision, dividing this septum, was followed by a gush of fluid, and complete relief of tension. He would like to know if any case of glaucoma was known after a satisfactory extraction. In the case of a medical man, upwards of 80, an abso-

lutely straightforward operation, followed by a contusion of the eye, resulted in great pain with increase of tension at night—probably due to swelling of the vitreous. An incision was made in the membrane across the center of the pupil; there was slight return of the glaucoma, but the eye subsequently recovered perfect vision.

DR. HILL GRIFFITH (Manchester) cited four cases in which glaucoma came on after extraction of the lens. In one, high tension followed the removal of an opaque lens; in another, after an ordinary extraction in which much cortex remained; a third was followed by iritis; in the fourth acute glaucoma with haziness of the cornea, the condition seemed to be instantly relieved by free discission. The tension, however, returned twice; but, after sclerotomy and then iridectomy, there was fair sight. For the most part glaucoma followed some complication; it had been more than usually disastrous of late after interference with immature cataracts. He thought the escape of vitreous might be the cause of glaucoma, by mixing with the softened cortex and forming a pastē round the margin of the anterior chamber.

MR. MCKINLEY thought the present observations were much in favor of preliminary iridectomy. This step was well under control, whereas other parts of the extraction operation were not so. The excision of the iris should be clean, and to the base; afterwards, a corneal section was of less moment.

MR. SILCOCK had known glaucoma after removal of an immature cataract cured by iridectomy. In one case, where the capsule was entangled, the removal of a further portion of iris by a second operation was successful.

MR. COLLINS, in reply, admitted the correctness of Mr. Critchett's remarks about the needles. The stout cylindrical needles were thought to cut better and to enter particularly well, but they permitted the escape of the vitreous, and had been discarded at Moorfields. In two cases where sclerotomy had failed to relieve glaucoma, the incision had not been peripheral enough, and the ciliary processes blocked the iris angle. In answer to Mr. Priestley Smith's question with reference to

glaucoma after satisfactory extraction, Mr. Collins said that it was very difficult to see entangled capsule, and still more so to detect entangled hyaloid of vitreous. Such accidents might explain the occurrence of glaucoma after apparently satisfactory extraction. The success following division of the septum between the aqueous and vitreous chambers alluded to, was consistent with this view.—*Brit. Med. Jour.*

NEW YORK ACADEMY OF MEDICINE.

Stated meeting, December 17, 1889, Dr. R. C. M. Page in the chair.

EYE SYMPTOMS AS AIDS IN DIAGNOSIS,

Was read by Dr. D. C. Cooks. It was the speaker's purpose to bring to notice an outline of the more important facts about the eye and its diseases, a knowledge of which was essential or helpful in diagnosis. Epiphora was at times the first symptoms of facial paralysis; the orbicularis failed to keep the puncta in contact with the globe, allowing the tears to flow over the cheek. In acute inflammation of the lachrymal gland there was frequently an attending fever, but the presence of the localized swelling and pain sufficed to make known the cause of the febricula. The presence of dacryocystitis indicated something more than a localized inflammation. It pointed to obstruction in the canal or sac, and was most frequently caused by neglected nasal catarrh. Excluding this, exostosis and periostitis, the result of syphilis was probably the cause of the trouble. Where the inflammation persisted in spite of the judicious treatment, other constitutional troubles would be found to account for it. Herpes zoster ophthalmicus was pathognomonic of changes, probably inflammatory, in the fifth nerve and Gasserian ganglion. The condition was frequently mistaken for erysipelas. The situation of the vesicles on one side of the

head over the distribution of the fifth nerve and the persistent pain should prevent such a mistake. The well-known symptoms of Bright's disease, morning œdema of the lower lids should not be overlooked. The reddened margin of the lids, blepharitis marginalis, indicated a lowered condition of the general health, or an error of refraction. Ptosis by itself might mean pressure from syphilitic deposits or rheumatic swellings.

Exophthalmus was pathognomonic of Graves' disease. When this condition was limited to one eye it might be caused by tumors of the orbit, syphilitic periostitis, or even an orbital hæmorrhage from whooping-cough. Exophthalmus had been known to follow an injury of the head. Where a patient complained of headache, nausea, vomiting, or pains through the temple or eyes, there should be an examination to know whether there was perfect harmony existing between the ocular muscles. The correction of insufficiencies by prisms or tenotomies would often give an entirely new aspect to cases that were formerly obscure. When all of the external muscles of the eyes were paralyzed we had ophthalmoplegia externa—a disease not of the eyes, but of the central nervous system, affecting the nuclei of the third, fourth and sixth nerves. A recurring paralysis of the third, fourth or sixth nerve was frequently the first indication of posterior spinal or of general sclerosis. Very often the first symptom of basilar trouble or intracranial disturbance was evinced by the paralysis of one or more of the ocular muscles. The progress of growths could often be watched by successive muscles becoming involved and the exact location of such neoplasms accurately marked out. Phlyctenular conjunctivitis was almost always indicative of lowered vitality, of eye strain or bad hygiene. Chronic conjunctivitis had about the same significance, but was also associated with nasal or pharyngeal catarrh. Phlyctenular keratitis occurred under about the same conditions as the two preceding diseases. Interstitial keratitis always indicated constitutional trouble. The great majority of these cases occurred in persons under twenty—usually from five to ten—and were symptomatic of congenital syphilis. The presence of keratitis

with hypopyon indicated infection from some quarter, possibly from nasal catarrh, dacryocystitis, or carious teeth. In cases where the cornea sloughed away without pain or distress in old people, we might know their vital powers were much depressed and their blood-vessels probably atheromatous. If we found the cornea cloudy or ulcerated, the patient complaining of no pain or photophobia, we had a keratitis due to lesion of the fifth nerve. Scleritis and episcleritis rarely occurred except in rheumatism or the rheumatic diathesis. Iritis might be due to hereditary, secondary, or tertiary syphilis. It might be due also to malaria, gonorrhœa, variola, rheumatism or gout. The speaker had recently reported a case of tubercular iritis in which the tubercle bacilli were demonstrated. An examination of the patient, a small child, showed the presence of a phthisical process in progress within the chest. In the first stages of pachymeningitis hæmorrhagica the pupils were, as a rule, contracted, and most markedly so on the side of the hæmorrhage. Myosis existed in the early stages of acute meningitis, and with the other symptoms gave valuable aid in its early recognition. The Robinson pupil was almost always associated with posterior spinal paralysis. When the cervical sympathetic was irritated by pressure of some growth, moderate myosis might call attention to the lesion; the accommodation was not affected. In complete paralysis of the third nerve there was mydriasis and paralysis of accommodation. Unequal pupils was one of the first symptoms of general paresis. One should be always on guard not to mistake the mydriasis of atropine for that of disease. The existence of mydriasis, together with other symptoms, might clear up a doubtful case of tumor cerebri or of syphilitic trouble of the base, or be indicative of a fracture through the apex of the orbit. Headaches not yielding to ordinary means might be due to weakness of the ciliary muscle. These cases were many times cured by being properly fitted with glasses. The ophthalmoscope should be in the hands of the general practitioner. The interior of the eye, aided by the mydriasis of cocaine, could readily be examined. A chorioiditis of the macula of each eye, together or

consecutively, attended with dust-like specks in the vitreous, was not infrequently met with, and was almost pathognomonic of syphilis, congenital or acquired. Its early recognition was of the utmost importance to the patient; if neglected, central vision was apt to be lost. In regard to the normal fundus, its negative value in diagnosis could only be appreciated by those who were accustomed to look to the ophthalmoscope as an aid in diagnosis. A rapidly forming or soft cataract might be the first symptom that attracted attention to the presence of diabetes mellitus. The presence of a soft opaque lens with a scar in the cornea, while proving that an injury had been inflicted, might also indicate the presence of a foreign body in the eyeball, which would require immediate attention. The most interesting part of the subject was the light thrown on intracranial changes and on general diseases by changes in the retina and nerve. The neuro-retinitis of Bright's disease produced changes in the region of the macula, which were pathognomonic. Optic neuritis, especially if double, was of the greatest importance as an aid to diagnosis in intracranial troubles. Atrophy of the optic nerve was one of a series of symptoms which might prove the previous existence of cerebro-spinal meningitis, basilar meningitis, growths in this same region, alcoholism, or fracture of the base of the skull with involvement of the apex of the orbit. At times, on examining patients who complained of failure of vision, a central scotoma for red was found; this was almost pathognomonic of tobacco poisoning. Night blindness occurred in commencing atrophy of the optic nerve and retinitis. Word blindness accompanied as a rule lesion of the cortex cerebri. Acquired partial or complete color blindness was indicative of nerve atrophy. For practical purposes the field of vision could be tested by the hand moved into different parts of the field while the patient kept the eye fixed on the face of the examiner. Limitations of the field were found in optic atrophy and glaucoma; in these conditions the fields were irregular and contracted. When monocular hemiopia existed, the condition was probably one of intraocular lesion; if binocular, intracranial lesion was certainly present,

the lesion being along the optic tract or in the occipital lobe of the same side as the loss of vision. In acute Bright's disease patients occasionally became suddenly blind without a lesion of the fundus. The difficulty was evidently central and due in all probability to an œdema of the centers for vision. This condition could be distinguished from the loss of sight in albuminuric retinitis. Acute glaucoma was sometimes mistaken for a bilious attack of hemicrania, and chronic glaucoma for incipient cataract. The increased tension of the eyeball, the dilated and immobile pupil, the limited range of accommodation, and the contracted fields would soon settle the diagnosis without the aid of the ophthalmoscope, were those signs looked for. The speaker closed his remarks with the hope that this brief glance at the aids which the eye gave to the general practitioner in diagnosis would stimulate each one to a renewed sense of responsibility and interest in this most interesting field.

DR. H. D. NOYES, after going over the various clinical points covered by the author's paper, warmly indorsed the opinion that the general practitioner should familiarize himself with the routine of the examination.

DR. WEEKS said that while it was of course not incumbent upon the general practitioner to make himself familiar with all the details of minute changes in the interior of the eye, which was the study of years, still there were certain gross changes and conditions which he ought to be able to look for and the importance of which he should know how to appreciate, and the recognition of which would often result in very great and immediate benefit to patients.

DR. W. F. MITTENDORF thought that with the perfect instruments now at command there was no excuse for any general practitioner who professes himself unable to examine the interior of the eye. Medical students could be taught to do this fairly well in one lesson.

DR. A. H. SMITH referred to a case, which he said Dr. Noyes would also remember well, in which a gentleman had been suffering for a number of years from a trembling of the right hand

and paresis of the right leg. Associated with this was a pain in the occipital region, brought on, it was assumed, by excessive use of the eye. On this latter point the speaker had consulted Dr. Noyes, who had prescribed glasses which had relieved almost entirely the occipital pain, and had to a great degree favorably influenced the trouble in the leg and to some extent that of the trembling of the hand.

DR. T. M. POOLEY said that it had not been his experience that atrophy of the optic nerve was a common occurrence in spinal meningitis. One serious eye symptom which was of importance in reference to general disease was that of intraretinal hæmorrhage, such as occurred, for instance, in general pernicious anæmia. This took place frequently when the arteries were diseased from any cause or where there were general structural changes, as in syphilis. Where these retinal hæmorrhages were observed the changes which were taking place were often considerable, and hæmorrhage might be expected to occur elsewhere and was quite likely to be intracranial. He thought many of the cases with slight degree of insufficiency of the ocular muscles would get well if left to themselves or taken from the domain of the specialist and the patients treated by a qualified general practitioner with a view to improvement of the general health.

The Chairman said that a case had come under his notice about a year ago which illustrated admirably the utility of the observance of retinal hæmorrhage as denoting the progress of disease. A patient of his who was suffering from Bright's disease, and was also complaining a little of some defect in eyesight, was making preparations to go South. The speaker called in Dr. Webster, who, on making examination, discovered retinal hæmorrhage. The patient's friends were informed of his condition and told that he might die of apoplexy at any moment. Death from this cause had taken place within 24 hours. This was a very fair instance where the simple examination of the retina supplied such information as rendered the prognosis most grave and enabled due notification of the facts to be given to the patient's family.—*N. Y. Med. Jour.*

SELECTIONS FROM AMERICAN MEDICAL JOURNALS.

EXTRACTION OF CATARACT.¹

BY JOHN B. ROBERTS, M.D.

As ophthalmological subjects are very frequently presented for the consideration of this Society, I venture to bring forward for discussion the Extraction of Cataract, because it is one of the most important topics with which ophthalmologists have to deal, and because it will be interesting and instructive to me to hear described the methods of operation adopted by other ophthalmic surgeons of this city.

I shall simply give you a brief outline of the steps of the operation in my hands, and report the cases upon which I operated from June 1, 1888, to May 1, 1889. As I was absent during the two summer months, it represents the work of nine months' private practice. Although these cases are not very numerous, being only some twelve or fourteen cataracts in all, they are sufficient to illustrate the points which I desire to bring forward. It must be remembered that they are reports of cases occurring in the ordinary run of my ophthalmic and surgical practice, and not the voluminous hospital records of one occupying the position of ophthalmologist in a hospital or college.

In preparing the patient for operation, I cleanse the face in the vicinity of the eyes with soap and water, and subsequently with a solution of boric acid or corrosive sublimate. I then

¹Read to the Philadelphia County Medical Society, Stated Meeting, Oct. 23, 1889.

wash out the conjunctival sac with a boric acid solution, instilled with an ordinary pipette. The instruments are kept in a similar solution of boric acid, which is made without any great accuracy as to strength. A few drops of a 4 % solution of hydrochlorate of cocaine are dropped into the eye two or three times during the quarter of an hour preceding the operation. A few drops of a four-grain solution of atropia are also instilled. Even before the use of cocaine was known, I did not give anæsthetics, because experience has shown me that the operation for the extraction of cataract is not painful, if the surgeon, by previous manipulation of the cornea and lids, teaches the patient to hold perfectly quiet. This can be done with almost all patients whom we meet, unless it be some one who is exceedingly nervous. A great deal of the advantage to be derived from this preliminary training depends upon the conduct of the surgeon, who can readily encourage and teach his patient to stand the slight pain due to cataract extraction, if he shows by his own actions that he is sure of himself. A nervous, bustling, fidgety surgeon is incompetent to perform ophthalmic operations.

At the present time it is, of course, needless to subject the patient to even this slight amount of pain, since cocaine anæsthesia is all sufficient, and exerts no deleterious effect upon the subsequent progress of the case. The steps of the operation, as I perform it, are as follows:

Having grasped the conjunctiva and the inferior rectus with a pair of fixation forceps, I make an upward incision in the cornea with a Graefe, a Beer, or a Jackson knife. I usually prefer the Graefe to the Beer knife. I have not had sufficient experience, as yet, with the Jackson modification to be sure whether I prefer it to the others. I must admit, however, that I have been favorably impressed with its value in making an incision in such a manner as to prevent the escape of the aqueous humor and prolapse of the iris.

The iridectomy which I always make is accomplished by catching and drawing out the iris with the iridectomy hook in the left hand, and cutting it with the Levis spring—scissors in

the right hand. I do not use the iris forceps for making the iridectomy, unless it happen that, for some reason, a portion of the part excised has not been perfectly detached from the iris. I then use the forceps to catch the ragged edges while making a second attempt at complete division.

Laceration of the capsule is done by making a T-shaped incision with a cystotome. Usually I make the horizontal cut of the T across the upper edge of the capsule as a first step, and subsequently make a median vertical slit by another movement. I have, however, on more than one occasion, slit the capsule with a single vertical stroke of the cystotome. The lens is then extruded by pressure upon the sclerotic and cornea, with the finger above and a tortoise-shell scoop below the incision. The finger makes the pressure upon the outside of the upper lid. If there is any difficulty, as there often is, in evacuating the soft cortical material or nucleus, I introduce the spoon and extract these remnants. In the event of it being the nucleus which is not properly detached, I often use the wire loop to make traction upon it.

After a few minutes have elapsed to allow reaccumulation of the aqueous humor, I let the patient sit up with his back to the light and place before the eye which has been operated upon a convex lens of about nine dioptrics, in order that I may prove to him that vision has been restored. By allowing the patient to look about the room and to count my fingers, I give him confidence in the result of the operation; and it greatly encourages him during the stages of convalescence to know that he has actually seen with the eye previously blind.

After instilling a few drops of the atropia solution, I seal the eye by means of two or three small strips of ordinary rubber plaster upon the upper lid. These strips of plaster are cut in the shape of a semi-ellipse, and are made to fit the upper lid, but under no circumstances are they to overlap the lower lid. In this manner the upper lid is made stiff, and acts as a splint to the wounded cornea. I have never used any other means of dressing after cataract extraction, nor have I ever seen any

other method used in the practice of Dr. Levis during the last fifteen or sixteen years.

The advantage of this method is that the eye is not heated, and tears and mucus can drain from between the lids, and the atropia solution can be introduced into the conjunctival sac every morning or evening, as the surgeon may deem proper. Before the operation I cut off the eye-lashes of the upper and lower lids, to prevent the eye becoming sealed by the dried secretion upon the lashes, which gives the patient pain, and has a deleterious effect upon the eye by interfering with the free flow of tears and mucus.

This method of dressing after the extraction of cataract is preferable, I am sure, to the one frequently employed, but which ought to be obsolete, namely, that which covers the eye with a mass of cotton, thus damming up the secretions and causing irritation and congestion. The effect of covering the eye can readily be seen by closing one's own eye with cotton and a bandage for twenty-four or thirty-six hours. As a rule, I close only the eye which has been operated upon. I do not restrict the patient to a dark room, nor do I confine him to bed.

Inspection of the cases below will show, I think, that no ill effects are produced by making the patient comfortable in this way. The habit, adopted by so many, of sealing both eyes and keeping the patient in absolute darkness for ten days or two weeks, is a relic of traditional surgery, and adds greatly to the discomfort of the patient. If the surgeon assures him that the operation is not painful, and that he will not be confined to a darkened room, the patient will be much more likely to submit to an early operation, and with a lighter heart.

I have brought forward these points as to the method which I have adopted in order to elicit discussion from the members of the Society. I think that the results of the cases appended will show that my patients get well more quickly after this manner of operation and subsequent treatment than by other methods. I have often been surprised at the low amount of vision which seems to satisfy some operators. If I have an

uncomplicated senile cataract to deal with, I look forward with almost perfect confidence to a restoration of vision, of at least two-thirds of the normal.

Occasionally it is necessary to do a secondary needle operation, to get rid of the thin veil-like secondary cataract due to the posterior capsule and to shreds of lymph. I am convinced that the bad results which frequently occur after cataract extraction are due not so much to the seriousness of the operation as to want of proper manipulative skill on the part of the operator, and to errors in the methods of dressing the wound. (Here follow the histories of 13 cases.)

DISCUSSION.

DR. GEORGE FRIEBIS.—I did not hear the whole paper, but I wish to say, in corroboration of what has been said, that I think that the bad results are caused more by deficiencies of the operator than of the method of operation. During the past four months I have performed four cataract operations and sent the patients from the hospital. I was encouraged to do this by the fact that one patient, who was sent from the hospital immediately after operation on account of the presence of erysipelas in the wards, did perfectly well. In the last three cases the vision obtained has been, respectively, $\frac{20}{L}$, $\frac{20}{XL}$, $\frac{20}{L}$.

DR. GEORGE C. HARLAN.—I unfortunately did not hear the early part of the paper, and do not know what points were made. The points of most interest at the present time, in connection with this operation, are: the after-treatment, the use of antiseptics, and performance or non-performance of iridectomy. There is no doubt that the after-treatment has been much modified of late. The patients are not kept so long in bed, and the dressings are much simpler. A large proportion of careful surgeons still retain the compress bandage, but I know of none who keep it on two weeks. I think it well to use the bandage for two days, and to keep the patient in bed

two or three days. We do not now darken the room, but rely on the bandage to keep the sunlight from the eyes.

Our experience in antiseptics at Will's Hospital is not uncomplicated, and about the time we began the use of antiseptics we moved into the new wards. There has been, however, as the result of one or the other or both of these causes, a great improvement in results. Suppuration of the cornea has practically disappeared. Different agents are used by the different operators, but the results are substantially the same. The only ingredient used in common is distilled water, and that perhaps would do as well. As boric acid has been shown to be without antiseptic qualities, I have abandoned it, and am now using bichloride, 1:5000. Even in this proportion it causes some irritation of the conjunctiva.

The question of iridectomy is now the great point of discussion. There is a strong party in favor of omitting iridectomy in the operation for cataract. For myself I am quite satisfied, not only on theoretical grounds, but from reported results, that the greatest good to the greatest number of cataract patients is promoted by adherence to iridectomy. There are æsthetical and perhaps optical considerations in favor of a round pupil; but this disadvantage, which has been somewhat exaggerated, is dearly bought at the expense of the greater difficulty in accomplishing delivery of the lens and the removal of cortical *debris*, and particularly of the risk of prolapse of the iris. Alfred Graefe, at last year's meeting of the Heidelberg Society, said that he had allowed himself to be bewitched by the round pupil, but that prolapse of the iris had disenchanted him. I am not sure but that preliminary iridectomy should be performed. I believe that the safest cataract operation is that in which an iridectomy is done not less than one, preferably two or three months, before the extraction. This renders it more easy to avoid inclusion of the iris in the angles of the wound, hæmorrhage is avoided, and pain, with the restlessness and muscular spasm which result from it, is absent. Graefe used to advise that preliminary iridectomy should be done where the patient had only one eye, and a dis-

tinguished European authority admitted, a few years ago, that in the case of his own father he would do a preliminary iridectomy. If safer in these cases, it must be safer also in the case of a patient with two eyes, or somebody else's father. There are considerations of expediency opposed to the preliminary operation, but, where it is practicable, I should prefer it.

DR. B. ALEX. RANDALL.—I have thus far done iridectomy in all operations, as it facilitates egress of the lens. A small removal of tissue is generally sufficient, and, after it, I have secured a perfectly mobile pupil, almost as round and perfect for visual purposes as though no iridectomy had been done—the coloboma being thoroughly covered by the upper lid. The corneal section and the exit of the lens are also facilitated by the dilatation of the pupil, which is afforded by the cocaine more thoroughly than by atropine, while cocaine does not interfere with the subsequent action of eserine in contracting the pupil and preventing incarceration of the iris in the wound. I wish to emphasize the point that cocaine must be used with caution, since it affects the nutrition of the corneal epithelium; and our studies show that it is largely upon this epithelium that the healing process depends. It has been pointed out that sometimes, where bichloride of mercury has been used after cocaine, there will be opacity of the epithelium of the cornea, or even its exfoliation. As a wash, distilled water does not seem a good agent for use in these cases since its specific gravity is too low to make it unirritating. A solution of salt of boric acid would seem to be best. I am far from believing that boric acid has not powers of value in practical use. While in the laboratory it may be far inferior to other so-called germicides, yet it probably has greater value than might theoretically be expected, and I shall continue to use it until better evidence is forthcoming of the superiority of other agents.

DR. FRIEBIS.—The last speaker referred to the fact that cocaine should be used with caution. American operators, as a rule, have been fortunate in the use of cocaine. In some insti-

tutions it has been used almost indiscriminately without unfavorable result. Among English surgeons more or less septic infection has been traced to the use of cocaine tablets. So far as my experience goes, liquid preparations of cocaine have produced no unfavorable effects.

DR. ROBERTS.—While I am convinced of the value of antiseptics and asepsis, I am still of the opinion that in eye-surgery neither antiseptics nor anæsthesia is absolutely called for. I use them; but I do not think that I have gained so much from antiseptic measures in cataract extraction as in operations in general surgery. In seventeen years' experience in the practice of Dr. Levis and of myself, I have not seen, I think, more than one case of sloughing cornea after extraction. Anæsthesia I believe to be necessary only under the most unusual instances. Of cocaine we may indeed use very little, because we actually need none. The surgeon can, by preliminary manipulations, teach the patient to stand the slight pain of the iridectomy and extraction of the lens.

I had hoped that more would have been said with reference to the value of preliminary iridectomy and rubbing the front of an immature lens to hasten maturation. I did that with advantage in one case. In one case I extracted an immature lens. I had hoped to hear discussion upon these points.

The little wrinkle of clipping the eye lashes has been of service to me. I think pain is often caused by the lashes becoming glued together, preventing the escape of mucus and other secretions. In these cases, relief is often experienced when a spontaneous gush of tears take place, from the glued lashes finally giving way under the pressure of the dammed up fluid. Clipping the lashes prevents this damming in of secretion.

Instead of leaving one eye open being irrational treatment, it seems to me that the method of making pressure upon the operated eye with a bandage and compress, and closing the well eye, and keeping the patient in bed perfectly blind for several days is the height of irrational treatment. It injures the patient by causing depression and nervous irritation. The

eye recovers more rapidly because the patient is made happy by the sight of sunlight and of friends about him. The sealing of the operated eye encourages inflammation because of the imperfect drainage.

I would, therefore, emphasize the following points: That the bad results are often due, in the first place, to want of manipulative skill on the part of the surgeon; and, in the second place, to the erroneous method of dressing employed by many. Many blind men owe their blindness to the clumsy surgeon or his irrational dressing.—*Medical Progress.*

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TUMORS OF THE OPTIC NERVE, WITH REPORT
OF TWO ORIGINAL CASES.

BY S. C. AYRES, M.D., CINCINNATI, OHIO.¹

Read before the Section of Ophthalmology at the Fortieth Annual Meeting of the
American Medical Association, June, 1889.

Diseases of the orbit present a very interesting group. They are very numerous, considering the size of the orbital cavity and its somewhat isolated location. Here we find tumors malignant and non-malignant originating in the orbital cavity, as well as growths from the nasal fossæ and the cerebrum, which encroach on it from different directions. Each one of these subjects might well command our earnest attention, but I propose to mention one class only, tumors of the optic nerve. They are comparatively rare, there being at present less than seventy cases on record. With your permission I will give a hasty resume of the literature at my command on the subject and then give in detail the two cases which have come under my observation.

¹This article already published in the Journal of the American Medical Association, is here reprinted at the author's request, as he hopes it will thus reach a larger circle of readers.

In Vol. xxv, *Graefe's Archiv*, Dr. Willemer, of Göttingen, reports twenty-two cases which had up to this time been reported. These include nine cases already reported in Vol. xix by Dr. Goldzieher, of Heidelberg, three of which he had himself operated on. He adds as an appendix five more cases, making twenty-seven in all. He gives a full and concise description of them macroscopically and microscopically, and an exhaustive statement of the various questions relating to growth, development, pain, probability of return, etc. It is a very comprehensive paper, and will well repay any one interested to read it carefully. Beginning with the case reported by Heymann in 1842, he gave in detail all the cases by Rothmund, Graefe, Sichel, Jr., Horner, Brailey, Goldzieher, Gruening, Leber, Alt, Mauthner, Holmes, Forster, and others, and gives in detail two cases observed by himself.

Dr. A. Vossius, of Königsberg, in *Graefe's Archiv*, Vol. xxviii, part iii, adds a contribution to the knowledge of the true optic nerve tumors, i. e.; those developed within the external sheath. He says in substance as follows:

Among the twenty-seven real optic nerve tumors described by Willemer, A. f. O., Bd. xxv, I, the sarcomata play the leading role. These were partly fibro, partly glio-sarcomata, and most of them were combination tumors mixed with myxomatous tissue. Fourteen cases, or 52%, were of sarcomatous character; six cases, or 23%, were myxomatous; five cases, or 15%, were fibromatous; one case was described as a scirrhus carcinoma, and one peculiar case was neuroma verum. The classification of all these cases has been very arbitrary, especially those described as myxomata and fibromata.

Imperfect methods of examination were the reason for incorrect classification of tumors which were observed in past years. Pure myxoma and fibroma may be considered a rarity.

The size and consistency of the tumors vary; the more tissue they contain, the softer they are. The external sheath surrounded the tumor in its entire extent, with but slight change in its structure; the external sheath and the tissue of the intervaginal space were chiefly involved. The optic nerve itself

showed a variety of conditions; it lay either unchanged in the middle, or more or less eccentric in the tumor substance. On the other hand it was recognizable only at its commencement near the eyeball, while near the middle of its course it was completely lost. Usually only one eye was affected; in rare cases an extension of the tumor involved the intracranial part of the nerve as far as the chiasma. A case of von Graefe's is recorded where both nerves and the chiasma were almost completely involved in a tumor which extended backwards to the pons.

In a case of Leber's there was found a multiple knotty swelling of the optic nerve in a normal appearing eye, the cause of which was a tumor of the same character in the other eye, for which the first eye was enucleated.

The years of childhood appear to be especially predisposed to the growth of these tumors; as is likewise the case with the development of glio-sarcomata of the retina, it is probable that both these varieties of tumors take their origin during foetal life. Heredity has never been proven in the case of these tumors, yet very frequently their discovery very soon after birth gives reason to suspect such an origin. Trauma is frequently the cause, both in childhood and in adult years.

The first and constant symptoms of true optic nerve tumors is exophthalmos, with slow and painless development. The motions of the eyeball are not affected until late, because the muscles are not involved, and because no attachment takes place between the surfaces of the eyeball and tumor. A second important symptom is an amaurotic condition of the eye. A suppurative keratitis sometimes results from the exophthalmos, and finally a degeneration of the entire eyeball.

A return of the tumor following enucleation has seldom been observed. Five cases are reported of death following soon after enucleation from meningitis, and two cases of death after an interval of several years from propagation into the brain.

The first case reported by Vossius was in a boy, æt. $2\frac{1}{2}$ years. The parents say that a few weeks after birth a peculiar appearance of the left eye was noticed. The papilla was very

much swollen, of a whitish color, and the vessels very tortuous. The eye and the tumor were removed. Microscopic examination proved the growth to be a myxosarcoma, and it was located in the inter-vaginal space.

His second case was a boy, æt. 8 years. Exophthalmos is said to have arisen the previous year after an attack of whooping-cough. There was white atrophy of the disc without indication of previous neuritis. Two years later a firm elastic swelling could be felt below and behind the eyeball. Motion of the eye downward and outward was defective. Antero-posteriorly the tumor measured 42 mm., the greatest height 22 mm., and width 27 mm. The arachnoid sheath was thickened, but the chief part of the tumor arose from the tissue of the intra-vaginal space. A strip of hæmorrhage existed around the periphery close under the dural sheath. The color of the periphery was a moss-green, while the middle was yellowish and lighter. A longitudinal section of the tumor mass shows an intricate fibrous network with numerous cells and more or less coarse connective tissue; occasional groups of myxomatous masses, among which were strongly colored balls and knotty masses; no nerve fibres.

In *Gacfe's Archiv.*, Vol. xxxiv, 1888, Prof. Dr. Schiess-Gemuseus reports a case of total myxosarcoma of the optic nerve removed with retention of the eyeball. It was in the person of a girl, æt. 12½ years. In childhood her parents noticed that she could not open the right eye quite as well as the left, but recently it has become larger than its fellow. The ball is also turned downward and outward. Vision is reduced to $\frac{6}{12}$ and the optic nerve presents a pronounced choked disc. In September, 1885, three months after her first visit to the clinic, vision had been reduced to $\frac{6}{20}$ and a hard tumor could be felt with the finger between the ball and the upper edge of the orbit. He decided to try to remove the tumor and save the globe. The operation was a brilliant success and the girl still retains the eye, and so far there has been no reproduction of the tumor. The tumor has the shape of a rounded spindle, is completely surrounded by a dense connective tissue capsule,

which is merely the external membrane of the optic nerve sheath. It was sausage shaped, surrounded the nerve and pressed upon the eyeball. At the rear end it passed close upon the optic foramen; the length of the nerve enclosed within the tumor was 37 mm.; the transverse diameter close to the ball was 13 mm.; its greatest diameter was 20 mm. The surface of the tumor was covered with numerous smooth elevations and depressions; the covering membrane was easily removable from the substance of the tumor. A bile-like substance filled the tumor, resembling more a secretion than a tissue. Microscopically the tumor shows a number of circular or rod-shaped nuclei, with here and there some fine free fat cells. The whole seems to be composed of a more or less dense fibrous mass of uncommonly long, fine, delicate fibres most of them containing somewhat oblong nuclei, others more round and occasionally quite long, rod-like nuclei; in general, each fibre contained one nucleus. The dural membrane encloses the tumor with an average thickness of $\frac{6}{15}$ mm.; processes extend into the body of the tumor from the dural sheath. The optic nerve fibres are everywhere sharply defined from the fibres of the tumor. The tumor is developed between the inner and the outer nerve sheaths. The thickness of the pial membrane varies from 0.6 to 0.12 mm. The integrity of the optic nerve is remarkably preserved; no trace of fatty degeneration.

Conclusions.—The pathological-anatomical examination shows with certainty that the tumor is not a neuroma, and that the nerve in its pial sheath is nowhere involved, the tumor being developed between the pial and dural membranes. Penetrating all through the fibrous structure of the tumor are very numerous blood-vessels having very thick walls. In many places there are œdematous spots. The growth of the tumor around the nerve was not everywhere equal in thickness, the nerve lying in some parts of its course against the dural sheath, in others in the middle of the tumor. The tumor has much similarity to those described by Willemer and Vossius as myxosarcomata (A. f. O., Bd. xxv and Bd. xxviii). The great vascularity and the thickness of the vessel walls are very charac-

teristic; the entire tumor must have originated with a slow growth from the fibres of the arachnoid. It is remarkable to find the optic nerve retaining so nearly its normal condition, surrounded as it is intimately by a growth of such size and character. The pial sheath is broken through by the growth of the tumor in only a few places. The macroscopical form is similar to those described by Willemer and Vossius—spindle-form; the contents a soft oozing mass.

The pathological-anatomical condition explains fully the reason of the varying state of the vision during the development of the tumor. The nerve, surrounded as it was by a soft very vascular mass, suffered occasional compression, in consequence of which the choked disc was to be seen without the ophthalmoscope.

The present case is especially interesting owing to the preservation of the eyeball. Knapp was the first who removed a similar tumor without sacrificing the globe, but the eyeball was lost later through suppurative keratitis. Dr. Gruening, however, had a successful case, but the tumor was a small one (size of a hazelnut) and situated close to the eyeball.

Mr. Geo. Lawson, in the Royal London Ophthalmic Hospital Reports for January, 1888, reports a case of tumor of the optic nerve, which he says is the third one which has occurred in his practice.

In the reports of the hospital for August, 1882, is the first case. Here he says that "tumors of the nerve are comparatively rare and may occur in two ways: First, they may be external to the nerve fibres and spring from the dural sheath of the nerve; second, they may grow from within the nerve, being intimately associated with the connective tissue between the nerve fibres and constituting a neuroma." He then reports and illustrates a case where the growth originated from the dural sheath of the nerve." In the same number of the Reports is a case of so-called "spurious neuroma" of the optic nerve, reported by Dr. J. W. Hulke. He says that "post-ocular intra-orbital tumors of the optic nerve and of the sheath are of such rare occurrence that the following case appears worthy of per-

manent record. The extremely slow rate or increase of the proptosis, indicative of correspondingly slow growth of the tumor, and the relative freedom of the movements of the eyeball, together with the normal appearance of the fundus oculi, had inclined me to regard exostosis as the most probable cause of the proptosis, and to reject as improbable a sarcoma or carcinoma of the orbital walls or optic nerve. This, however, proved erroneous."

The case is as follows: Caroline, æt. 19 years, a thoroughly healthy-looking brunette, was admitted on July 6, 1881, into the Middlesex Hospital. She had extreme proptosis of the right eyeball to the extent that even with a strong effort she could not close the eyelids, and sometimes in the attempt they slipped behind the eyeball. This occasionally happened in the act of winking, and it was so painful to her, and the effect so distressing to those about her, that she shunned society and was rendered more unhappy by this than by the loss of sight. The eyeball moved consensually with the other, and nothing unnatural could be felt within the borders of the orbit by pressure through the eyelids. Vision was reduced to quantitative perception of light. With the ophthalmoscope nothing unnatural was discernable in the optic nerve or retina. The external aspect of the eyeball was perfectly natural.

History.—An elder sister who accompanied her said that the unnatural prominence of the eyeball began to be noticed in her sixth year, and that its increase has been very gradual and unattended with pain, but with progressive loss of sight.

The eyeball and the tumor were therefore removed together, the optic nerve being severed close to the foramen opticum. The tumor was firm, of a spherical outline, in size about one-third less than that of the eyeball, from which it was separated by a portion of seemingly healthy optic nerve somewhat more than half an inch long. The extremely slow growth of the tumor (dating its beginning from the time when the protrusion of the eyeball was first noticed) is a remarkable circumstance, and one well calculated to lead to a mistake in diagnosis.

Structure.—The short piece of nerve that intervenes between

the eyeball and the tumor is folded on the latter in such a way that the two bodies lie almost in apposition. Except for some thickening the dural sheath passes unchanged over the mass, but the loosely arranged fibres of the intervaginal space are enormously increased in the neighborhood of the entrance of the nerve into its front part. They also bear far more nuclei than normal. Towards the center of the tumor they gradually become replaced by an imperfectly fibrillated tissue containing numerous cell elements, of which the majority are small, perhaps .005 mm. in diameter. All gradations of size are found up to the largest, which are .026 mm. in diameter, oblong, and perhaps slightly drawn out at the ends, with several dot-like nuclei and numerous granules. The pial sheath and nerve fibres lose themselves in approaching the center of the tumor. The new growth appears to be a sarcoma taking its rise in the loose tissue of the intervaginal space, most probably from the nucleated cells found upon its fibres.

In the journal referred to above Mr. Lawson says: "Tumors of the optic nerve behind the eye, but within the orbit, are rare. In my own practice this is only the third case I have had. The first case was recorded in the *Ophthalmic Hospital Reports*, Vol. x, p. 296; the second in the fifth edition of my 'Manual of Diseases and Injuries of the Eye,' p. 238; and the third is the case I have now to relate. In each of these the eye was blind.

"The symptoms in the following case were sufficiently pronounced to enable me to suggest that the growth in the orbit was probably a tumor of the optic nerve behind the eye. They were: A protrusion of the eye downwards and forwards, but the proptosis of only a moderate degree; steady loss of sight, first noticed with the commencement of the proptosis and terminating in complete blindness.

"The prominent symptoms which seem to indicate tumor connected with the optic nerve are proptosis, with early impairment of vision. The loss of sight in orbital tumors not connected with the optic nerve is caused either by the stretching of the optic nerve from the proptosis, or by the pressure

of the growth on the nerve. There is seldom complete blindness unless the growth by its side has destroyed the functions of the optic nerve either by pressure or stretching. In this patient the defect of sight was an early symptom, which progressed to blindness before there was a sufficient stretching of the optic nerve to account for it, or a large enough growth in the orbit to produce it by pressure. Lastly, with the ophthalmoscope there was seen white atrophy of the optic nerve, with enlarged retinal veins, evidently due to the pressure of a tumor on the nerve, and, from its comparatively small size, probably directly connected with it.

“Edward R., æt. 12 years, admitted July 25, 1887.

“*History.*—Two months ago his left eye was first noticed to be ‘larger’ than his right; since that time it has gradually increased and the sight has gradually failed in it. He has not had any pain in the eye, but headache, frontal and behind the ear on his left side, at times.

“*State on Admission.*—Left eye proptosed and misplaced forward and downward; movements of eyeball good. At the upper and inner part of the orbit is felt a hard mass extending backward in close contact to the roof of the orbit. There is no nasal obstruction or deafness, no posterior palatine growth, and no glandular enlargement. He has no perception of light with the left eye; the pupil is inactive to light. By ophthalmoscopic examination the disc is seen to be white and the margin blurred, the veins big and tortuous and obliterated in places near the margin of the disc. T. n. The right eye is normal.

“He introduced a speculum between the lids and excised the eye with the tumor around the nerve *en masse*. Behind the globe, which upon examination presented nothing unusual, was a tumor surrounding the optic nerve and extending backwards from the sclerotic a distance of 2½ mm. In its widest part its diameter was 18.5 mm. Irregularly pear-shaped, with the smaller end forwards and with a lobulated surface, it was entirely enclosed in the optic nerve sheath. At the posterior limit of the growth, where the nerve emerged, it and the sheath

were in contact, but the nerve was somewhat thickened. The tumor was fairly firm to the touch, and near its anterior end were felt one or two small cysts beneath the capsule.

“Microscopical Examination.—The new growth is a sarcoma of loose connective tissue type, which in parts is undergoing myxomatous degeneration. In those parts which are apparently free from this change the stroma is finely fibrous and forms in places a delicate reticulum resembling that met with in lympho-sarcoma, with this difference, that there are no cells in the meshes. Throughout the growth the cells are very loosely arranged and there are no clumps of cells, such as are usually met with in the true myxo-sarcomata. The cells are round and oval, but the former largely predominate. No spindles were found. There are numerous small areas of myxomatous degeneration, but in no section were there found the translucent spherules described in tumors like this one by Vossius, Leber and others. A few vessels in the growth show marked hyaline degeneration of their walls, which are greatly thickened and their lumen almost obliterated; but in none of the sections examined were there any hyaline appendages to the degenerated vessels.

“Scattered through the optic nerve are large numbers of cells, which are identical in appearance with the cells of the new growth. The nerve fibres show little if any change, but the trabeculæ are thickened. The pial sheath can be traced unbroken over the thickened nerve, but it is being invaded by the tumor cells. The dural sheath, which is but loosely attached to the tumor, is not implicated. Though it is impossible to tell with certainty the site of origin of the tumor, it is most probable that it grew from the connective tissue of the inner sheath, or from the loose tissue of the intersheath space.”

Wolfheim, in his inaugural dissertation, December, 1887, Koenigsberg, collects together the cases of tumors of the optic nerve which have up to that time been published (42 cases up to 1884). He adds to them those of which up to this time no mention has been made since 1884. He gives a detailed ac-

count of a new case, so that the total number of published cases amount to 61. The sarcomata were the most numerous, amounting to 49.

The new case was as follows: It was in the person of an eight-year-old boy, in whom the left eye had become gradually more prominent. There was pronounced swelling of the papilla. On the temporal half of the papilla, at the junction of some small blood-vessels, lay three small, round hæmorrhages. Digital exploration of the orbit revealed a firm tumor probably connected with the optic nerve, of an irregular surface, which extended back to the region of the optic nerve. The optic nerve was severed close to the optic foramen and removed with the globe.

The tumor began 7 mm. behind the globe and presented a post-horn-shaped outline. The length of the growth was 27.5 mm., its breadth 21 mm., and its height in the middle 24 mm. The growth was covered with a strong capsule, which constituted the immediate continuation of the dural sheath of the optic nerve. When incised it presented a homogeneous appearance. The result of the microscopic examination showed it to be a genuine spindle-celled sarcoma with partial myxomatous degeneration. At the same time it was very vascular and filled not only the sub-dural space, but had extended from the pial sheath into the nerve itself, and apparently had inserted itself in the trabeculæ, projecting into the trunk of the nerve.

In the *Journal of the American Medical Association*, December 10, 1887, Dr. George E. Frothingham reports two cases of tumor of the optic nerve occurring in young people, one a lad æt. 7 and the other a girl æt. 17 years. In both the eyes were enucleated with the tumors. In one case there was a papillitis, in the other there was not.

In the case of the boy the tumor involved the entire substance of the optic nerve from the foramen to the globe. It was $1\frac{5}{8}$ in. in its long, and $1\frac{1}{16}$ in. in its short diameter. In the other case it was not quite so large, and the ocular end of the nerve was free for about half an inch. Both were round-celled sarcomata. No return to date.

In the *AMERICAN JOURNAL OF OPHTHALMOLOGY*, Vol. i, 1884, p. 243, Dr. Aub reports a case of myxosarcoma of the optic nerve. It was in the person of a married woman, age not given. The microscopic examination was made by Dr. Alt, of St. Louis. He says it consists chiefly of spindle-shaped and stellated cells. In many parts of the growth the mucoid substance is accumulated in the form of smaller and larger cysts of irregular and round shape.

I come now to the first of my own cases: J. D., æt. 12 years, was seen for the first time July 18, 1886. He said the right eye had been amblyopic since last spring. There was no history of trauma and he had not suffered any pain, but had continued in school all the time until impairment of vision and probably diplopia had attracted his attention to the eye. There was a slight exophthalmos and vision was reduced, + T.I. The media were clear. There was well-marked optic neuritis, the disc was swollen and quite prominent, and the vessels upon it obscured. Vision was reduced to the perception of shadows of the hand outward. As there was no reason to suggest or recommend an immediate operation, I put him on a course of kali. iod. and ordered him to come back again in a month.

In August his vision was slightly better; he could count fingers at one foot. I saw him again in October, and his vision had improved to counting fingers at five feet. The swelling of the optic disc had subsided considerably, but there were evidences of optic nerve atrophy coming on.

I did not see the patient again until April 5, 1888. At this time there was a marked change in the appearance of the eye. Vision was entirely obliterated and there was atrophy of the optic disc. There was proptosis of the eye, and a tumor or growth of some kind could be felt in the upper and outer portion of the orbit. It felt firm but somewhat elastic. Motility of the eye was unimpaired. April 9, I made the operation, hoping that I might be able to remove the tumor and save the globe. I made a free incision through the conjunctiva parallel with the external rectus muscle, and then another incision

close to the cornea at right angles to it, severing the external rectus muscle, leaving a little stump attached to the sclera, in case I should want to unite the cut ends of the muscle. After passing my finger along the tumor and exploring its location and size as well as I could, I became convinced that it would be impossible to save the globe and remove the tumor.

I then proceeded to remove the globe and afterward the tumor. There were no special difficulties in the case and the globe was severed close to the optic foramen.

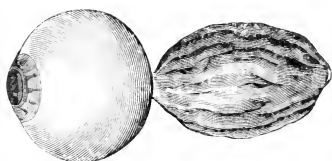


FIG. 1.

Macroscopic Appearance.—The tumor was spindle-shaped, or rather sausage-link-shaped. It was quite regular in outline and was enclosed in a thick, firm capsule. Its outer surface presented a wrinkled or corrugated surface. It was 28 mm. in length, and 20 mm. in diameter at the thickest portion. It was quite firm and solid. (See Fig. 1).

Microscopical Examination by Dr. James M. French.—Preparatory to microscopic examination, the specimen was hardened in Mueller's fluid and absolute alcohol. Sections were then cut $\frac{1}{500}$ inch in thickness and part of them stained in hæmatoxyline, part in alum-carmin.

On examination the growth was found to be a sarcoma of the small round-celled variety, very vascular and in some parts supported by an abundance of fibrous tissue, but for the most part exhibiting a large amount of mucoid tissue, and consequently belonging to the class designated "myxosarcomata."

The tumor mass completely surrounded the optic nerve, which still remained visible, even to the unaided eye, at a point near

the centre of the transverse section. The small round cells which constituted the most striking feature of the growth were of nearly uniform size, measuring from about $3.5\ \mu.$ to $5.0\ \mu.$, each containing a distinct nucleus and more or less granular protoplasm. The intercellular spaces are filled by a colorless, translucent substance, in some parts amorphous, but in most parts marked by exceedingly delicate fibrillation. In the more translucent regions were found in considerable numbers the indistinct fusiform and stellate cells with long, delicate prolongations characteristic of mucoid tissue.

Fibrous tissue bands of variable width subdivided the neoplasm into numerous compartments of varying size, but never very large. In these the cells rested without definite arrangement. The fibrous tissue is everywhere very vascular. In some places the blood-vessels are of large size with firm muscular walls; in others mere spaces without defined walls. As in all sarcomata, these blood-spaces are abundant in the cellular portion of the tumor, appearing like narrow channels washed through the mass of cellular tissue. Along the course of the blood-vessels, particularly those of comparatively large size, pigment has been deposited, partly as a diffused yellow-brown stain, partly in a granular form. In some places this discoloration is decided, in others but very slight.

The optic nerve was found invested in a much thickened pial sheath which completely separated it from the surrounding neoplasm. The nerve had, however, undergone marked degenerative change. The fibrous tissue envelope of the nerve fibres (neurilemma) had undergone a decided thickening (sclerosis), producing an equally decided atrophy on the nerve fibres. Scattered throughout the substance of the nerve were a large number of amylaceous bodies, some of which were intact and exhibited the characteristic parallel lines, others had been fractured, probably in the preparation of the specimen.

The tumor had for its envelopé the external fibrous sheath of the optic nerve. This had, however, undergone decided thickening, and was so loosely attached to the neoplasm that a considerable portion of it was unavoidably detached in the

preparation of the specimen for microscopical study. In addition to the increase in thickness of this sheath, there was a very manifest increase in the number and size of the blood-vessels. Numerous pigmentary deposits were also found, and in a few places cyst-like openings. In some portions there were also evidences of the extension of the neoplasm into the meshes of the fibrous tissue; it was nowhere found, however, to have involved the entire thickness of the sheath.

The appearances obtained from a longitudinal section of the growth were not materially different from those just described. The alveolar spaces, if such they could be called, presented a little greater average length, showing that the bands of fibrous tissue forming their walls to a certain extent followed in its course the long axis of the growth.

The fibrous tissue envelope of the neoplasm was found to be continuous at the extremities of the tumor with the dural sheath of the nerve, thus supporting the supposition that the growth originated in the connective tissue of the nerve sheath. There has been no return of the tumor up to date.

My second case was in the person of a young lady. Miss Nellie S., æt. 22 years, a strong, well developed young woman in excellent health, when eight years old fell while playing on the ice and struck the back of her head. She was insensible for a short time and there was tenderness in the back of the head which continued for three months afterward. About two years later she had an attack of malarial fever; there was some swelling and œdema of the lids, and while testing her vision she discovered that her right eye was nearly blind.

I saw her first in 1880, about seven years after the accident above referred to. At that time there was atrophy of the optic disc and vision was reduced to *nil*. There was a slight prominence of the eye and a slight divergence. There was no pain, and the eye gave her no inconvenience except from loss of vision.

I have seen her from time to time up to the present year, and there has been a gradual increase in the prominence of the eye. There have also been shooting pains occasionally

in the orbit and in the right side of the head, which have increased recently. The eye now stands about 7 mm. in advance of its fellow. The motions are perfect in all directions, and it is not possible to detect any tumor by pressing the finger between the walls of the orbit and the globe. The ball cannot be pressed into the orbit.

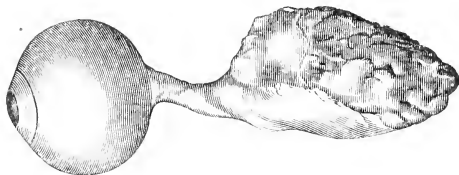


FIG. 2.

I made the operation March 9, 1889. After severing all the muscles, I found that the growth was very firmly attached to the apex of the orbit and it was with some difficulty that I detached it. It came out entirely, leaving the bony wall of the orbit smooth. There was a mild orbital cellulitis following it but it seemed to subside quietly and she returned home in about ten days. After her return home she seemed to do well for about two weeks when she was attacked with typhoid fever from which she died about six weeks after the operation.

Macroscopical appearance of the tumor: (See Fig. 2) It was triangular, or rather irregularly pyramidal in shape. The base of the pyramid was attached to the inner wall of the orbit. The growth was enclosed in a strong capsule which presented a uniformly smooth surface except inward where there were three small elevations or nodules. It appeared as if the tumor had made an attempt to perforate the capsule at these points. The optic nerve was not involved for a distance of 8 mm. from the globe. The base of the tumor (the portion attached to the bone)

measured 25 mm. in length and 14 mm. in breadth. The surface measurement of the tumor on its longest side was 40 mm. and its shortest 20 mm. It measured 20 mm. in thickness. Macroscopically it presented a pinkish grey color and was of homogeneous consistency.

Macroscopical examination: The specimen after being thoroughly hardened was first cut transversely at a point near its middle. Ocular examination of the cut surface revealed an almost homogeneous mass; a few linear subdivisions were however visible on close inspection. No evidence of the optic nerve could be discovered. The tumor was enveloped in a thin fibrous capsule which was manifestly continuous with the external sheath of the optic nerve projecting from its extremity.

Microscopic examination showed the tumor was a myxo-sarcoma, the cellular elements of which were of the small spindle variety. The cells throughout the greater part of the section were closely aggregated with a very little inter-cellular tissue, and this was for the most part amorphous in character. The growth was however sub-divided into numerous small and very irregular compartments by delicate bands of fibrous tissue. These supported blood vessels of embryonic character. Similar blood-vessels or channels were visible throughout the cellular masses. The growth was not, however, remarkable for its vascularity. The course of the spindle cells was peculiar and interesting. In some portions of the growth cells were seen which had been cut longitudinally and therefore appeared as perfect spindles, and in other portions, as is usually the case, cells had been cut obliquely or transversely, causing them to appear oval or round.

In one portion of the growth corresponding to the central region of the tumor, there was a peculiar circular or whorled arrangement of the cells. The center of these whorls was found to be the axis cylinder of an optic nerve fibre. These fibres were found so widely separated that the space occupied by the remains of the nerve was more than four times the normal diameter of the optic nerve. The nerve fibres had undergone marked atrophy. Numerous amylaceous bodies were also

present in the same region of the tumor. The pial sheath of the optic nerve had been so incorporated with the new formed tissues, or so completely replaced by them as to be indistinguishable.

In the longitudinal sections the appearances were not materially different from those observed in the transverse cut, so far as the neoplasm was concerned. There was abundant corroborative evidence of the persistence of nerve fibres in the region of the growth that has been described. The mucoid tissue seen in the transverse section was even more apparent in the longitudinal, resembling in some parts broad bands translucent tissue with a few nucleated cells and in some instances surrounding small islands of neoplastic cells.

The external sheath of the growth was found to be continuous with that of the optic nerve and there was no evidence of its having been invaded by the disease.

The two cases I have observed resemble several of those already reported, but especially those of Schiess-Gemezeus and Mr. Lawson. In the case of the former however the macroscopic appearance was very unlike that of the most if not all of the cases. He says that a bile-like substance filled the tumor, resembling more a secretion than a tissue. In nearly all the cases the tumor was firm and elastic if not quite solid.

I have added to the sixty-one cases reported by Wolfheim, six new cases, viz: one by Mr. Lawson; two by Frothingham; one by Aub, and two from my own practice. All of these but one (that by Aub) occurred in young persons, and in this one the age is not given.

Two of these six cases may be classed with the sarcomata, and four with the myxo-sarcomata. The number reported to date do not furnish sufficient data from which to draw any very definite conclusion as to pathology and prognosis. There has been heretofore a somewhat arbitrary classification of these cases, but the present exhaustive and critical microscopic examination will place each case where it belongs.

We may say in general that these tumors occur more frequently in the young, that they are very slow of growth (as il-

lustrated by my second case), that they are sometimes congenital as in the case reported by Vossius, and that they may be of traumatic origin.

Microscopically they are sarcomata or myxo-sarcomata. One of the prominent symptoms to aid in differentiating between a tumor of the optic nerve and a sarcoma of the orbit, is the almost unimpaired motility of the ocular muscles in the former.

CLINICAL CASES AT THE NEW AMSTERDAM EYE AND EAR HOSPITAL, NEW YORK.

THOS. R. POOLEY, M. D., NEW YORK,

Surgeon-In-Chief

Reported by E. A. KIRKPATRICK, M.D., Resident Surgeon.

I. *Traumatic Mydriasis*.—David C., æt. 25 years, entered the dispensary on January 29, having been struck in the right eye with a piece of wood a half hour previously. His condition was as follows: R.V.= $\frac{20}{xx}$; L.V.= $\frac{20}{xv}$; slight abrasion of the right upper lid, a dilated pupil which did not respond to light and which was associated with a moderate hyphæma. The pupil was perfectly round, showing that the stretching and paralysis involved the whole muscular tissue of the iris and not a part which causes an irregular dilatation, the rule in mydriasis from a blow upon the globe. The cornea was clear, the sclera uninjured, the field good and no *paresis of accommodation*. Eserine was used locally for a day or two but was afterward discontinued. The patient was under observation for three weeks and at the end of this time both the mydriasis and hyphæma had entirely disappeared. R.V.= $\frac{20}{xv}$; L.V.= $\frac{20}{xv}$.

II. *Sympathetic Irritation Excited by Phthisis Bulbi*.—Mary G., æt. 30 years, was admitted to the hospital February 5, with phthisis bulbi and iridocyclitis of the right eye accompanied by sympathetic irritation of the left. The patient gives a history of having suffered at the age of ten from measles followed by inflammation in the right eye which resulted in complete loss of vision for that eye. No history of trauma but there is of perforation. After a prolonged quiescence—a period of

seventeen years—the lost eye began to be sensitive, a condition which gradually became painful. During the same period the left eye has also been weak and at times painful. Condition upon entrance: Right eye phthisical, cornea shrunken, globe quadrangular and painful to the touch, especially about 15° to the inner side of the central vertical meridian in the upper quadrant. In the left eye slight lachrymation and photophobia were complained of, beside the weakness and sensitiveness above mentioned. L.V. = $\frac{20}{xxx}$ Hm. $\frac{1}{36}$. Jaeger No. 2 at 12" showing some paresis of accommodation.

No pericorneal injection, media clear but pronounced hyperæmia of the optic discs. Enucleation of the right eye which was done on February 5, revealed the presence of ossification of the choroid. The patient progressed favorably and was discharged on February 8.

Returning to the dispensary on March 10, to secure an artificial eye, I found a healthy condition of the left eye which had been in a condition of sympathetic irritation previous to the enucleation of its fellow. No lachrymation, no photophobia, no sensitiveness, a healthy optic disc and full recovery of accommodation. L.V. = $\frac{20}{xx}$ Hm. $\frac{1}{60s}$. Jaeger No. 1 at 8".

In this case we have an example of sympathetic irritation existing for years and not passing on to the much dreaded inflammation, also that the removal of the exciting eye is followed almost immediately by the cessation of symptoms of irritation.

III. *Episcleritis*.—Mrs. M., æt. 39 years, was admitted to the hospital February 12, 1890, suffering from episcleritis of the left eye. The patch of inflammation was localized on the internal portion of the eyeball, embracing about one-fifth of the extent of the ocular conjunctiva. Before entrance to the hospital for ten days the patient had complained of severe and continuous pain, supra-orbital and temporal in location, also epiphora and photophobia.

During this time hot applications had been vigorously applied while atropine had been instilled for the four days preceding her entrance with the effect of materially accelerating

the pain, and in no way alleviating the distressing symptoms. Thus we note atropinization as recommended by most authors to avert iritis only proved intensely irritating in this case. A critical examination revealed an uncomplicated episcleritis—there being no infiltration of the cornea, no iritic complication and no vitreous opacities. The sweat cure was adopted and proved highly efficacious. Six tablets of pilocarpine $\frac{1}{70}$ grain each were given by the stomach every day and the hot applications were continued. Twenty-four hours after admittance there was a complete cessation of the pain.

Although a rheumatic history existed no medicine was given for that constitutional diathesis.

This treatment was tenaciously adhered to with the addition of yellow ointment morning and evening in the second week. The patient was discharged on February 26, practically cured. All signs of active inflammation had subsided and in its place a blue patch of thickened superficial and episcleral tissue was conspicuous, a patch which shaded off and gradually lost itself in the healthy colored conjunctiva. On March 12, I saw the patient and found the eye still improved with less discoloration in the site of the past episcleritis.

V.=²⁰/_{xx}.

TRANSLATION.

ON THE CIRCULATION IN THE RETINA IN CASES OF ANÆMIA FROM CHRONIC HÆMOR- RHAGES AND OF CHLOROSIS, AND ITS DEPENDENCE ON THE CONDITION OF THE BLOOD.

BY E. RAEHLMANN.

(*Zehender's Klin. Monatsbl. f. Augenhlk.*)

As is well known, Quincke as the first, and later on, Becker, described the visible pulsation of the retinal arteries in cases of insufficiency of the aortic valves. O. Becker, furthermore, found this visible pulsation in cases of aneurysm of the aorta, of Basedow's disease, and of chlorosis. My own researches finally have proven that the pulsation of the retinal arteries can be seen almost regularly in some forms of chlorosis, and especially often in chronic anæmia after hæmorrhages which recur frequently at intervals; sometimes also in neurasthenia.

Some of the exceptions to my theory of the origin of this arterial pulsation in anæmia and chlorosis taken by Schmall¹ have already been refuted partially, and partially weakened by A. Friedrichson.²

It is and remains a fact, that in many cases of anæmia arterial pulsation is exceedingly well pronounced, while in other cases it is totally wanting. In anæmia, especially in chlorosis, there exists often an, if not absolute, still relative, hyperæmia

¹B. Schmall. A. v. Graefe's Arch. f. Ophtha'mologie, xxxiv., i. p. 37.

²Ibidem xxxiv., iii. p. 207.

of the retinal bloodvessels, aside from the appearance of pulsation.

I was of the opinion that those cases of anæmia which show pronounced arterial pulsation and hyperæmia are also clinically differing from those cases in which this pulsation as well as the hyperæmia are wanting, and I have been able to find a number of proofs for the idea, that in these cases we have to deal with a very hydræmic condition of the blood.

The following points gained by the direct examination of the blood have prompted this opinion.

1. That in most cases which show arterial pulsation the number of the corpuscular elements of the blood is, on an average, smaller than normal; that in some cases they are very materially, in others but little, but nearly always visibly diminished in number.

2. That in these cases the individual corpuscles show almost always a decrease in volume and are smaller than normal ones.

3. That most of these corpuscles contain less hæmoglobine, and are specifically lighter, and, therefore, in a watery solution, do not sink as easily to the bottom as normal corpuscles, and are more easily carried along by the fluids.

4. That in some cases of anæmia which showed a very pronounced and typical arterial pulsation in the retina, all three of these conditions were present, viz., diminished number of corpuscles, reduced quantity of hæmoglobine, reduced gravity and volume.

In many of these cases of arterial pulsation either a normal condition of the retinal arteries or a hyperæmia was present, which was something directly opposite to the general anæmic habit, and which, when the function was normal, could not be explained by local changes within the eyes. In the cases showing this repletion of the blood-vessels and pulsations, we have clinically to deal with anæmic or chlorotic individuals who are comparatively well nourished, have mostly a good quantity of subcutaneous fat, but a waxy skin and a so-called diaphanous complexion.

Aside of the usual complaints of chlorotics many complained of palpitation of the heart and of the blood-vessels of the neck; in many the heart's choc was tremulous; sometimes the left ventricle was dilated. In many the curve of the radial pulse showed a pulsus altus and celer.

On the other hand, I found in exceedingly many of the anæmic individuals which did not show a retinal pulsation corresponding to the anæmic aspect of their skin and mucous membranes, an anæmia of the retina, with narrow, straight bloodvessels, and the clinical symptoms of a progressive loss of strength, lassitude, feeling of weakness, inability to work, and symptoms of collapse. The paleness of the skin was, however, less pronounced than in the other form, and there was mostly an absolute lack of subcutaneous fat or the reduction of the former quantity of it, and a shrivelled, toneless skin of a pale gray color. Very often I found no diminution, or but a small one, of the blood corpuscles, and but a slight reduction of the quantity of hæmoglobine. We even saw not a few cases of anæmia in which the quantity of hæmoglobine and the relative number of the blood corpuscles were found normal, in spite of a pronounced paleness of the skin and mucous membranes.¹ Irregularities in the volume and shape of the corpuscles were often wanting. In these cases the radial pulse was mostly small and soft, and the heart choc normal.

There exists, then, according to my experience, no sharp line by which we might distinguish between two groups of anæmia which are clinically and ophthalmoscopically different. The differentiation above described is abstracted from the average conditions of all the cases examined, to the number of more than two hundred. According to the condition of their blood the chlorotic patients of the first group, following Larsche², would belong to the true chlorosis; those of the second group would be cases of pseudo-chlorosis. According to Graeber,

¹It has but recently been shown by Friedrichson that the amount of hæmoglobine contained in the blood is but slightly dependent on the number of its corpuscular elements.

²L. Larsche. *Die Anæmie*. Christiania, 1888.

on the contrary, the patients of the first class would not be called chlorotic but anæmic, and those of the second class chlorotic. The fact that the arterial pulsation is not equally visible in all cases of the first group of anæmics, and that it is not totally wanting in all cases of the second group, may be explained by the very nature of the pulse.

As has been stated before, the arterial pulsation of the retina is a sign that the wave movement of the blood reaches abnormally peripheric parts. It arises when there are abnormal differences in pressure in the arterial system. These latter, when reaching into such small arteries as is the centralis retinæ, and becoming visible in the shape of the pulsation under consideration, are a valuable symptom in certain disturbances of the circulation of the blood. They are not solely an interesting ophthalmological freak, but the sign of something pathological in the circulatory apparatus; and the knowledge of their cause must be just as important, if not more so, for the internal clinician, as it is for the ophthalmologist. As soon as we have recognized the cause for the systolic and diastolic differences of pressure in the peripheral arteries, we have found also an explanation for the arterial pulsation. It is not necessary to look far for an explanation of an arterial pulsation in insufficiency of the aortic valves; we can satisfactorily explain these differences in pressure by the fact that the high wave, being thrown from the dilated ventricle into the arteries, regurgitates into the heart through the leaky valve.

For the arterial pulsation in anæmics we have to find another explanation. The pulsation is often as well pronounced as in typical cases of insufficiency of the aorta, although no anatomical lesions can explain the uneven pressure. How, then, will we explain the retinal pulse in anæmics? Right here the results of my examinations of the blood of anæmics and chlorotics become important. If the corpuscular elements are diminished, if they are smaller than normal, if on account of a lack of hæmoglobine, their specifically heaviest component, they have become more easily movable, the column of blood must also be more easily moved about by the action of the

heart, since there is necessarily less friction between the parts themselves, and between the parts and the walls of the blood-vessels. In consequence a weaker heart's action suffices to produce comparatively large effects in motion, and when the heart's action is normal or increased, as it often is in anæmia, and especially in chlorosis, the pulse wave is carried abnormally far into the blood stream, and can yet be in existence in the smaller arteries which ordinarily show no pulse.

This effect must be the larger the thinner the blood of the anæmic.

According to Immermann we have in anæmia after repeated losses of blood a hypalbuminosis of the blood, since the tissues furnish the concentrated blood especially with fluids.

In chlorosis, however, according to Immermann, the quantity of the serum albuminates is probably normal. The statements of Becquerd and Rodiers agree with this opinion, since their chemical examination of the blood of six chlorotics gave in 1000 parts of blood, 72.1 parts of serum albumen, whilst the normal blood contains but 57 parts.

In order to find out more with regard to the quantity of albumen and water in the blood of anæmics and chlorotics, Mr. Zumft at my request has made a number of examinations of chlorotic blood, in Prof. Kobert's pharmacological laboratory. Twenty to thirty grammes of blood were withdrawn from the temple of the patients by means of a Heurteloup. These examinations are not yet concluded and their results will be published later on by Mr. Zumft. * * *

* * * According to our examinations, a hydræmic condition of the blood, combined with oligocythæmia and lack of hæmoglobine, are the main characteristics of chlorotic blood. Yet a number of signs seem to make it probable, that we have in many cases of chlorosis a true plethora serosa.

We may first mention the clinical reasons for this. In many chlorotics we find the physical signs of an increased action of the heart and blood vessels, abnormal pulsation of the large blood vessels, palpitation of the heart, above all, frequently, a dilatation of the ventricles, especially of the left one, which

then holds an immense quantity of blood, although there are no valvular lesions or stases in the circulatory apparatus.

In the same chlorotics we have also an abnormally high radial pulse. * * *

* * * Finally and pre-eminently does the dilatation of the retinal arteries prove a plethora serosa, since in many cases of chlorosis these blood vessels actually contain an increased quantity of blood. This fact is the more important, since the retinal blood vessels are the only ones in the body, the condition of whose contents can be directly seen.

Our observations, then, prove a hydræmic condition of the blood in chlorotics, as well as in chronic anæmia after periodical profuse hæmorrhages.

A thin blood, with a diminished number of abnormally small and specifically light blood corpuscles, must be abnormally and easily movable, and, therefore, as Cohnheim and Lichtheim have shown already, a more rapid stream of the blood and a quicker passage through the capillaries must result, even if the heart's action is not increased.

We must, therefore, vouchsafe to the thin condition of the blood a great influence in the causation of the pulse of the retinal arteries. The increase in the rapidity of the blood-stream which results from the hyperæmia and the reduced friction, must especially favor the locomotion, since the force with which the quickly moving column of blood is pushed against the convex part of arterial arches must cause a short and strong displacement of the whole tube.

The hydræmic condition of the blood of anæmics cannot be without influence upon the nutrition of the walls of the blood-vessels, and the observations by Israel, Thoma, Kaefer and Luck show that in chronic anæmia and chlorosis the elasticity of the bloodvessel walls is always reduced, that is, they are more easily dilated.

This easy dilatation of the blood vessels is, of course, prone to assist the other causes in their action in producing the arterial pulse.

This expansion of the bloodvessel walls by the pulse wave

must necessarily allow an existing inequality in the blood pressure to be felt abnormally far and long, so that it must be perceived in much smaller arteries than is usually the case. * * *

* * * The hydræmic condition of the blood can, as I have shown elsewhere, be recognized further by an abnormal transparency of the retinal bloodvessels. Not only are the bloodvessels abnormally pale, so that the venous blood is abnormally light and barely distinguishable in color from the arterial blood; it is even possible to see underlying blood vessels, or the outline of the optic papilla, through these enlarged bloodvessels. The pallor and transparency are dependent chiefly on the quantity of hæmoglobine in the blood; they were, however, most pronounced in cases in which there was also a diminution in the number of the red blood-corpuscles, aside from the lack of hæmoglobine.

It might not be impossible to explain the hyperæmia of the retinal arteries, as we find it not infrequently in anæmia and chlorosis, and which is in direct contrast to the aspect of the skin and the mucous membrane, by a lack of elasticity in the walls of the bloodvessels, confined to the retina. Since, however, the malnutrition of the blood vesselwalls, due to the abnormal condition of the blood, is not confined to the bloodvessels of the retina, but acts in the same manner on all the bloodvessels of the body, we assume that the abnormal size of the retinal bloodvessels is simply a local symptom of a disturbance in the circulation which effects equally all of the peripheral bloodvessels.

The enlargement of the retinal bloodvessels remains almost the same at different stages of the disease, and disappears when the disease ends, that is, when the symptoms of anæmia disappear.

In a number of cases in young girls I found the pulsation and hyperæmia of the retinal blood vessels, in whom a prolonged period, previous to the onset of the chlorosis, I had found a perfectly normal fundus, and in whom after the chlorosis had disappeared the fundus again became normal.

Generally the ophthalmoscopic picture is but little changed during quite a long time, according to the duration of the anæmia. The improvement, that is, the return to the normal, sometimes takes place rather suddenly and rapidly; usually it is slow and gradual. * * *

* * * Our arguments assuming a dilatation of the small blood vessels of the body, or at least of larger areas of them, is seemingly in contradiction to the pronouncedly pale skin, which is characteristic of anæmics and chlorotics. The fact is generally known that a sudden pallor of the skin is due to contraction of the blood vessels of the skin. Yet, there is also a continued pallor of the skin, aside from vasomotor influences, in individuals whose blood does not possess the faculty to produce the normal coloring. In these cases we can assume, that the pallor of the skin is due to abnormal narrow bloodvessels in the skin. This explanation might, even, be the correct one in cases of diminution of the absolute quantity of blood, in the true "poverty in blood" of the authors, as well as in acute anæmia following hæmorrhages. In chronic anæmia and chlorosis matters lie differently; since here the faculty of the blood to color is reduced, the skin must be abnormally pale, even when the peripheral bloodvessels have a normal calibre. There may even be a relative pallor, in spite of an increase in calibre concerning whole areas of bloodvessels, since the blood is abnormally pale.

The ophthalmoscope alone gives us the direct and unassailable proof of the existence of such discordant conditions; since the tissue, over which the enlarged vessels run, the optic papilla, is abnormally pale, in spite of the considerable degree of hyperæmia seen in the retinal blood vessels.

SOCIETY PROCEEDINGS.

TENTH INTERNATIONAL MEDICAL CONGRESS.

INVITATION TO TAKE PART IN THE PROCEEDINGS OF THE SECTION FOR OPHTHALMOLOGY.

In accordance with the resolution of the Ninth Congress held at Washington, the Tenth International Medical Congress will be held this year at Berlin, opening August 4, and ending August 9, 1890. The delegates of the German Medical faculties and of medical Societies of the German Empire have elected, the undersigned members of a Sectional Committee of Organization. In this capacity we have the honor to cordially invite your participation in the proceedings of our section. We hope to enjoy the satisfaction of welcoming large numbers of our colleagues to Berlin and also of seeing our section meetings numerously attended. We append the programme of our Section as far as hitherto arranged with the request that any further proposals, as well as offers of addresses, papers, or demonstrations, may be sent in with as little delay as possible.

With the hope that the meeting of the Sections may prove interesting in themselves and useful to the advancement of science.

We remain most respectfully. The Committee of Organization for the Section of Ophthalmology.

Eversbusch, Erlangen; v. Hippel, Giessen; Hirschberg, Berlin; Leber, Göttingen; Michel, Würzburg; Schmidt—Rimpler, Marburg; Schweigger, Berlin; v. Zehender, Rostock.

All communications or inquiries regarding the business of the Section must be addressed to Professor Dr. Schweigger,

Berlin NW., Roonstr. 6. Other communications and inquiries of a general character must be directed to the general secretary of the Congress, Dr. Lassar, Berlin, NW., Karlstr. 19.

PRELIMINARY PROGRAMME OF THE SECTION FOR OPHTHALMOLOGY.

1. Sympathetic ophthalmia.
 2. Trachoma.
 3. The influence of the electric light upon the eye.
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EXTRACT FROM THE GENERAL REGULATIONS AND PROGRAMME.

IX. In the meetings of the sections, questions and problems will be discussed, which have been agreed upon by the special Committees of Organization. The communications of those appointed by the committee to report on a subject, shall form the basis of discussion. As far as time allows, other communications or proposals, proceeding from members and sanctioned by the Committee of Organization may also be introduced for discussion. The bureau of each section decides as to the acceptance of such offered communications, and as to the order in which they shall come before the meeting, always provided that this point has not been already determined in the meeting itself by a decree of the section.

Scientific questions shall not be put to the vote.

X. Introductory addresses in the Sections must as a rule not exceed twenty minutes. In the discussions no more than ten minutes are allowed to each speaker.

XI. All addresses and papers in the general and sectional meetings must be handed over to the Secretaries, in writing, before the end of the meeting. The Editorial Committee shall decide whether—and to what extent—these written contributions shall be included in the printed transactions of the Congress. The members who have taken part in the discussions, will be requested to hand over to the Secretaries, before the end of the day, in writing the substance of their remarks.

XII. The official languages of all the meetings shall be German, English and French. The Regulations, the Programme and the Agenda for the day will be printed in all three languages.

It will, however, be allowable to make use of other languages than the above for brief remarks, always provided that one of the members present is prepared to translate the gist of such remarks into one of the official languages.

Those who take part in the congress shall pay a subscription of twenty marks (one pound sterling or five dollars) on being enrolled as members. For this sum they shall receive a copy of the transactions as soon as they appear. The enrollment shall take place at the beginning of the congress. Gentlemen may, however, be enrolled as members by sending the amount of the subscription to the treasurer¹ (with their name, professional status and residence appended).

¹Treasurer's Address: Dr. M. Bartels, Berlin SW.. Leipzigerst. 75.--Please enclose a visiting-card.

NEWS.

THE NEW YORK EYE AND EAR INFIRMARY.

The corner-stone of a new building for the institution is to be laid to-day (Saturday). The circular announcing the fact says: "As the infirmity is the oldest institution of the kind in the country, it appears to us, is one deserving of special notice at the hands of our local press. This event will bring together a notable company, no less on account of its municipal, scientific, and heroic interest, as the distinguished character of the gentlemen who will take part in the ceremonies. The Hon. Chauncey M. Depew will preside, the Right Rev. Henry C. Potter, Bishop of New York, will make the opening prayer, while the Hon. George William Curtis will deliver the principal address. The New York Eye and Ear Infirmary was founded in 1820. It was organized with a staff of two physicians, and the first year gave relief to six hundred patients. To-day the staff is represented by forty-six surgeons of the highest rank, while the number of patients is now annually close upon twenty thousand. The institution has gradually accumulated an endowment fund of \$250,000, a sum fairly sufficient for its maintenance, but none of this sum can be diverted to building purposes without seriously crippling its resources and circumscribing its field of work. Yet a new building is an imperative necessity, on grounds of sanitation as well as those of lack of room for practical operation, not to mention laboratory work, ample facilities for which should be provided in connection with every institution of this character. The needs being as stated, the trustees and surgeons some time ago set about to raise a building fund. To date about \$70,000 are subscribed, in large part the personal gift of the trustees and surgeons themselves. About \$30,000 more is needed to complete the enterprise as now projected. This amount it is hoped a generous public will in due course provide."—*New York Med. Jour.*

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CAPSULITIS PURULENTA ET HÆMORRHAGICA.

BY E. A. KIRKPATRICK, M. D.,

Resident and Assistant Surgeon of the New Amsterdam Eye and Ear
Hospital, New York.

In searching the literature of ophthalmology, and learning how conspicuous is the scarcity of reference to capsulitis, I judge it of interest to review a case which has been under my observation for a few weeks past. It supervening upon a ten days' favorable progress after cataract extraction, developing into an alarming and prolonged sequela, and having a propitious termination, are not the least interesting of its features.

On April 20, 1889, Miss B., æt. 75 years, entered the New Amsterdam Eye and Ear Hospital with immature cataract in either eye. Vision as follows: R. V.= $\frac{20}{cc}$. L. V.= $\frac{6}{cc}$. The cataracts being exceedingly slow in ripening, Dr. Pooley at this date performed Förster's operation on the left eye to hasten the maturing process. Recovery was prompt and the patient was discharged to await further development.

On February 10, 1890, the patient returned to the hospital in good health and with a hard ripe cataract. L. V.= perception of light.

February 11. Graefe's extraction was made without accident and no cortical matter was left. All went well for a period of ten days and the patient was beginning to plan for her return home. The dressings upon removal each day had revealed a healthy condition, the appearance of the wound was all that could be desired, and vision was such that time by the watch was easily told.

At this date, February 21, the patient had developed a severe rhinitis which was accompanied by injection of both conjunctivæ, more pronounced in the operated eye, but it naturally being the more susceptible to untoward influences, no special alarm was sounded, though of course a critical examination was made, showing at this early date no apparent complications of the internal structures. The following night the patient was restless and the next day presented a chemotic condition of the conjunctiva, ocular and palpebral, of the operated eye. Upon careful examination a small opacity, the size of a pin-head, and thickening were seen at the inner and lower margin of the capsular coloboma. There were no corneal or iritic complications, no infiltration of the wound. A drop of atropine caused a quick response of the iris. This minute proliferation gradually extended until nearly the whole capsule was involved. My notes of the case, under date February 26, read as follows: "On the 22d had noticed thickening and opacity of the capsule in inner lower portion resembling a pustule, a condition which has gradually extended across the inferior portion of the capsule, now including the external area as well. The pupil still responds readily to atropine and the iris presents a healthy appearance. The pupil has become hazy, especially in the lower portion, wherein a slight hypopyon is visible. The infiltration is now pronounced in the lower part of the capsule and is hæmorrhagic and purulent in character. Some pain referable to the eye and vertex headache have been complained of, while the chemosis of the conjunctiva, œdema of the lids and watery discharge have been excessive. The focus of greatest chemosis corresponds with the focus of beginning capsulitis, viz.: A few millimetres from

the sclero corneal margin on the nasal side and on a horizontal plane with the first noticed capsular infiltration. No adhesions exist and the corneal wound remained closed and free from irritation. Four leeches to the temple applied and atropine instillations every three hours ordered. Calomel and soda bicarbonate at bedtime also. Antipyrine, 10 grains.

The patient had a comfortable day, free from pain and headache." On February 27, the condition of the capsule above described included the whole membrane except a small portion corresponding to the coloboma in the iris and the hæmorrhagic character of the inflammation predominated. Until March 3, no material change took place. Under this date my notes read: "The whole pupillary area is filled with the products of inflammation, more pain in the head, especially on the left side (vertex) and the eye slightly tender to the touch, ciliary irritation."

March 5; "A decided improvement. A portion of pupillary area, superior and nasal, has become quite free and clear, No pain. Chemosis still persists." From this date a gradual improvement took place until March 20, when all signs of inflammation had disappeared. A distinct and separate hyphæma occupied the lower part of the anterior chamber for a few days, but it, too, was finally absorbed. As will be noted the duration of this case was exactly four weeks. The pupil from extreme dilatation has become slowly and moderately contracted, the iris is healthy in appearance, in color resembling its fellow, and the pupillary area is occupied by a dense gray membrane, except a small opening superiorly through which sufficient light is transmitted to enable the patient to count fingers at three feet. Doubtless this membrane will readily yield to an after operation and good vision be secured.

I may just mention that the treatment of this case included atropine, leeches, cold and hot applications, laxatives and darkness. Very much benefit was derived from the hot applications.

In Knapp's *Archives of Ophthalmology*, vols. I and VI, H. Knapp in recording his third, fourth and fifth series of cat-

aract extractions, refers to a few cases of capsulitis uncomplicated, by which I mean simple capsulitis without corneal, iritic or ciliary complications. The author, however, does not refer to the cause, predisposing or exciting, apart from the traumatism inflicted upon the capsule at the time of the extraction. If traumatism be the cause it is a matter of surprise that the complication is not only of the rarest occurrence but so late in its development.

Corneal and conjunctival diseases are often met with where the etiology is easily traceable to nasal irritation, hence, it has occurred to me that possibly the preceding rhinitis in the case reported might be considered etiologically, and also, that the excessive hæmorrhagic character of the inflammation may have, as a factor in its causation, the maturation process—Förster's operation—an operation which may produce a vascular condition of the capsule and thus render it more liable in an inflammatory process to be attended by hæmorrhages. In none of the text-books on ophthalmology could I find any reference to the subject, and, therefore, presume that the occurrence of such a case as I have reported is exceedingly rare.

TRACHOMA.

BY BARTON PITTS, M.D., ST. JOSEPH, MO.

Professor of Ophthalmology, St. Joseph Medical College; Ophthalmic Surgeon, Union Pacific Railroad.

Read before the Missouri Valley Medical Association, St. Joseph, Mo.,
March 20, 1890.

In considering the subject of trachoma, I have nothing original in the way of pathology to offer, nor any new remedies to suggest. My desire is to present a synopsis of the symptoms of this most troublesome chronic eye disease and to call attention to a few of the points of difference between it, and other forms of conjunctival disease with which it is likely to become confounded. In the way of therapeutics, I have no new specific to suggest as the list is already overflowing—a sure indication of the inefficacy of them all—I desire, however, to emphasize the method of application of a few remedies which, if carefully and intelligently used, will, I think, enable the profession to answer in the affirmative, that trachoma or chronic granular lids, is curable. The disease of trachoma dates back in its origin to the earliest times of history. In Egypt, at the present day, I am told by an experienced medical man from that country, that it is the exception to find a native exempt from this loathsome pest. Amongst the Hebrew race, the Chinese, Italian, the Irish, and amongst almost every civilized people it prevails, and is carried all over the globe. In the great majority of instances the disease is found to flourish in asylums, jails, tenements, and amongst the poorer, and consequently more crowded and uncleanly class of humanity.

In visiting, not long since, a so-called charity orphan asylum

my disgust as well as commiseration was excited by the universal prevalence of this disease amongst the inmates.

In this Western population, which is composed to such a large extent of people of foreign nationality, the disease, even in the rural districts, exists to a distressing degree. In the South it is not nearly so prevalent, and amongst the negro race it is almost unknown. In fact, in five years' observation in the South, I do not recall a case of trachoma in a negro. I have, of late years, observed a few cases in that race in this section of the country. I account for such immunity not by any want of race susceptibility, but, I consider it, as due to their comparatively short existence as a race amongst civilized people, and to the further fact that the disease does not exist in their native country.

In studying the history of this disease and taking into consideration the various ways of its propagation, such as crowding together of the inmates of eleemosynary institutions, want of cleanliness, ignorance as to the infectious nature of the disease, etc., a very practical lesson could be drawn to advantage, toward preventing the maintenance of this, one of the great plagues of humanity. It would seem, however, vain to hope for an obliteration of the disease by hygienic precautions where so much depends upon civil co-operation and individual intelligence and care.

As a striking instance of the contagiousness of the disease, and its heir-loom propensities, I will mention a family in the extremely poor class of this city, in which the disease is present unto the third generation—affecting the grand-father, grand-mother, their six or eight children, and their many grand-children—covering a period of life from two years to seventy, and existing in all stages of development, from that of quiescent presence of the trachomatous bodies; blennorrhagia, inflammation of the conjunctiva, thickening and drooping of the lids, ulceration and pannus of the cornea, absorption of the conjunctiva with incurvation of the tarsal cartilages, producing entropion, trichiasis, and in several older members of the family, destruction of the eye-sight. Since the researches

and experiments of Sattler, in 1881-2, the opinion of those of the profession who have considered the subject, is that the cause of the affection is due to the presence of a specific trachoma diplococcus. It is true that careful investigators have, in numerous instances, failed to discover the presence of the characteristic diplococcus, as described by Sattler and Michel. It is possible, however, in this affection, as in many other contagious diseases, that there are modifying influences such as progressive or retrogressive metamorphosis of the specific germs; or changes produced in the conditions by local applications; or varied by individual greater or less predisposition to inflammatory complications, etc., which may enter as important factors in reaching definite pathological conclusions as to the specific cause.

It is claimed that the introduction of the specific diplococcus upon the normal conjunctiva gives rise to the development of trachomatous bodies and the characteristic inflammation, known as granular lids. True it is that the introduction of the secretion from a trachomatous eye upon the healthy conjunctiva gives rise to the characteristic disease. By many the disease is accounted for solely upon the supposition of contagion. In some rare sporadic cases, it is difficult, however, to account for the origin of the disease upon this hypothesis. But if we consider the intricate and innumerable ways of propagation of contagious material, such cases may not be so incomprehensible.

I have observed in many instances cases in which only one eye of an individual would be affected with granulations, the other having remained exempt for years, or indefinitely. Again, in an eye in a state of phthisical atrophy, almost invariably a trachomatous condition of the conjunctiva exists. Eyes suffering from chronic inflammation seem sooner or later destined to be infected with granulations. Such instances may illustrate another factor in considering the pathology of contagious diseases—that is, the more or less favorable conditions of the parts, or soil upon which the infectious material seeks habitation. Owing to the wide-spread prevalence of the disease, its

extremely chronic nature, often extending in its slow stages over a period of several decades, rendering life a burden, impairing, and oftentimes destroying the eyesight, disfiguring to the appearance, loathsome to associates, and a constant nidus of infection, it is, in its demands upon the attention of the medical profession, second to no disease in ophthalmology with which we have to deal.

From the mildness and apparent innocence of the early stage the insidious progress of the disease, and the stubbornness with which it resists treatment, I am aware of the difference with which individual cases are ordinarily considered at the hands of the profession. By many its recognition is considered so easy that the flippant diagnosis of granular lids is made to cover errors of refraction; intraocular troubles, simple, catarrhal and purulent conjunctivitis; corneal ulcerations; inflammation of the iris, and in fact it is confounded with almost every trouble to which the eye is subject; standing as a scape-goat in eye troubles, as a convenient appellation of malaria does in general diseases.

Its early recognition is not only important in offering a more favorable opportunity for a successful and speedy cure, but in many instances saving one's reputation in prognosis, and for skill in handling such supposed innocent eye inflammations. Trachoma is ordinarily divided into the acute and the chronic forms; such a division is, however, artificial, and, I think, misleading. It is true that in acute catarrhal conjunctivitis trachomatous bodies may be engrafted and found upon subsidence of the conjunctival inflammation, and true it is, that in trachoma acute catarrhal conjunctivitis, may supervene, rendering a differential diagnosis at this stage of the affection extremely difficult, even at the hands of those familiar with the appearance of these structures in such affections. The advent of the trachomatous infection of the conjunctiva may be accompanied by inflammation, in the so-called acute forms of trachoma, but, all such cases subside into the chronic form, and pass through the slow stages of inflammation before cure. Trachoma is essentially a slow, chronic malady, depending upon the neoplastic

formation in the conjunctiva of firm yellowish or grayish bodies, and accompanied by vascularity, roughness, and thickening of the conjunctiva. The lower lid is usually first affected, the inflammation, thickening, and granulations extending to the submucous tissue of both lids and the retro-tarsal folds at a later period. This newly developed tissue, after long periods is partly absorbed and partly converted into dense white tendinous scars, which, in the process of slow shrinking, gives rise to much damage to the structures of the eye.

It is important in considering the nature of this disease to bear in mind that the surface of the conjunctiva, does not ulcerate, and that the prominences are not granulations in the surgical sense. Neither should they be confounded with the velvety papillæ of the conjunctiva presented in acute inflammation of that membrane, although, such a velvety condition of the conjunctiva sooner or later co-exists in trachoma. For the reason that the term "granular lids" can be quite as appropriately applied as expressing the physical condition, and appearance of the surface of the conjunctiva, in a state of catarrhal inflammation, as, in that in which there is a new formation of the trachomatous bodies, I think the term "trachoma" is more distinctive and less conducive to mistakes in diagnosis and treatment. In the normal conjunctiva there are present numerous small, clear, or semi-transparent bodies, especially in the upper and lower retro-dorsal folds at the outer or temporal side, and supposed to be lymph glands, known as the follicles of Krause, and which are often made the bug-bear of a supposed case of trachoma.

There is another condition of the conjunctiva, often met with in the young and poorly nourished, known as "follicular conjunctivitis." In these conditions there are present in large numbers, small, clear "frog-spawn" follicles scattered over the surface of the retro-tarsal folds, especially the lower fold. In appearance the condition is very similar to true trachoma, but unlike it in termination, the follicles undergo absorption and disappear without inflammation or cicatricial changes in the surface of the conjunctiva. The differential diagnosis between

such a condition and that of trachoma depends upon the relative degree of inflammation, difference in color, size, and location of the bodies. In follicular granulations the bodies are clear, transparent, and like frog-spawn, small in size, and confined to the retro-tarsal folds. In trachoma there is associated irritation, inflammation, and thickening of the conjunctiva, and subconjunctival tissues. The individual trachomatous bodies are larger and of a yellowish or grayish tint, and distributed promiscuously over the surfaces of the lids, retro-tarsal folds, and even upon the conjunctiva of the sclerotic. A further distinction is that in the one condition there is usually more or less pannus of the cornea, and invariably there is, in trachoma, a development of scar-tissue, which is not the case in follicular or catarrhal conjunctivitis.

In catarrhal inflammation of the conjunctiva, there is absence of the characteristic trachomatous bodies, evidence, however, which at the time may be only negative—for despite the careful exploration of the surface of the conjunctiva with a probe and magnifying lens—the degree of thickening and enlargement of the papillæ of the surface may render search uncertain. Delay in opinion until subsidence of the inflammation and thickening is, in such conditions, the only sure procedure.

Trachomatous inflammation has so many stages, and the conditions are so often varied and modified by individual peculiarities and treatment, and are associated with such numerous and varying complications, that in the application of remedies it is necessary to consider these varying circumstances in order to render a correct prognosis, and secure a favorable termination of the disease. In the early stages of the disease, there may be present in a quiescent state the neoplastic granulations, remaining unnoticed for months or even years; the irritations slight, the eyelids are perhaps only a little glued together after sleep.

At a later stage after exposure to wind or dust, or upon use by lamp-light, irritation of the eyes supervenes, with a roughness of the lids as though a foreign substance were present

The granulations multiply, the conjunctiva becomes congested and inflamed, the papillæ become enlarged, and perhaps the upper lids droop. The discharge at first, thin and watery, becomes thicker, more copious, and of a muco-purulent character. In some cases the tendency to a catarrhal or muco-purulent inflammation is more or less persistent; in other individuals there is a marked tendency to subsidence, periodically, often deluding the afflicted patient into a false hope of permanent relief, and temporarily redounding to the reputation and profit of the supposed skilled adviser, in whose hands the individual happens to be at the time.

Sooner or later relapses ensue, recurring again and again, accompanied by considerable corneal infiltration and conjunctival hypertrophy, and, gradually giving rise to various grave complications, such as trichiasis, pannus, entropion, etc. As the development of the granulations progresses, if unchecked, the new tissue extends deep into the stroma of the conjunctiva which, in the slow process of nature's cure, undergoes partial absorption, and is partly converted into cicatricial tissue. The conjunctiva undergoes atrophy and contraction; these changes in the structure of the conjunctiva often extends to the retro-tarsal folds, thus obliterating the natural cul-de-sac above and below. Even the tarsal cartilage may be included in the atrophic process, giving the inner surface of the lids a peculiar, glistening or tendinous appearance, and by contraction, so distorting the shape of the tarsus as to produce the destructive complications of trichiasis and entropion. These latter conditions of the conjunctiva are accompanied by an alteration and diminution in its normal secretion, so that its surface becomes dry, rough, and oftentimes scaly.

The cornea, even in the early progress of the disease is involved, often at first by small ulcerations and phlyctenulæ at the sclere corneal junction, superficial pannus, especially at the upper border—the result of the constant friction of the roughened lids; or due to the extension of the granulations and hypertrophy on to the cornea. There is occasionally dense pannus, softening and bulging of the cornea, resulting in great

impairment of vision and often blindness. In forming the prognosis in this affection it should be taken into account that this is an extremely intractable chronic disease, precarious in its course, and uncertain in its complications and outcome. Nature's method of cure is that of absorption of the granulations with accompanying atrophy of the conjunctiva, and often extends over many years, and is attended by untold discomforts and dangers.

In considering the measures for relief in this affection the multitude of remedies suggested is prodigious; most of them, however, such as the various stimulants, have for their object the establishment and maintenance of a certain degree of irritation or inflammation of the conjunctiva, under which condition, especially in the latter stage of the affection, nature's process of absorption of the adventitious products, is undoubtedly hastened. At the head of this list stands the conventional agent—sulphate of copper or blue-stone.

When cautiously and intelligently used it is invaluable, and almost indispensable; but on the other hand, when used indiscriminately, not only during the inappropriate stages, but more especially in its unwarranted use in mistaken cases of supposed trachoma I think it problematical, whether it has been productive of more benefit than harm in ophthalmological practice. Antiphlogistic sedative and anodyne agents suggest themselves according to the degree of the inflammation, irritation and discharge.

As routine treatment, and especially for home use, I favor frequent cleansing of the conjunctiva, with an antiseptic wash of 1-4000 solution of bichloride of mercury; and the periodical application between the lids, with protracted massage, of an ointment of yellow oxide of mercury, 20 to 30 grains to the ounce. These measures are only auxilliary to nature's slow process and involve long suffering and patience on the part of the individual, and intelligence in selection, and care in their application, on the part of the physician. With such care, however, untold suffering may be diminished, dangerous complications avoided, and the course of the disease markedly shortened. As a radi-

cal and immediate cure for this condition of trachoma, there has been suggested an agent extensively used in Brazil, known as "Jequirity." Its action, like that of gonorrhœal matter, is to excite such an intense inflammation and discharge, that in given cases the trachomatous thickened conjunctiva and pannus of the cornea are, as it were, miraculously cleansed, regenerated and made whole, in the short space of a few days' time.

My personal experience with this agent is limited to only one case, but from my observations in that instance and from the reported experience of others, I am satisfied of the great value of this remedy, especially in some conditions of trachoma, that is, in which there is a great amount of pannus, with hypertrophy and dryness of the conjunctiva. In such cases brilliant results have been reported from the use of this agent, restoring to usefulness and health, eyes that under any other course of treatment, were apparently incurable. Unfortunately it is not free from danger, nor so effectual in the early stages of the disease; could the application be limited and the severity of its effect be controlled, we might hope for a more extended usefulness of this agent in the future.

There has been one method, however, which has been recently suggested, and which I have given extensive trial in the treatment of this affection, by which, in conjunction with other agents, speedy relief and cure can in almost every case of trachoma be assured.

I refer to the process of expression or squeezing out of the granulations. Various methods of procedure are recommended, such as using the thumb nails, scraping, etc., but such manœuvres I have found awkward and ineffectual. My preference is to use a diminutive pair of ring forceps, and after cocainizing the parts, to strip the entire surface of the conjunctiva free from all visible granulations. This procedure should be repeated from time to time using as auxilliary measures thorough and frequent washing of the conjunctiva, with 1-3000 or 1-4000 solution of bichloride of mercury, and occasionally, for the stimulating effect, especially in the more advanced chronic cases, an ointment of yellow oxide of mercury, and where there

is much thickening of the parts with pannus of the cornea, and sluggishness of the absorption, the occasional application of the crystal of copper.

Since using this method of expression or squeezing out of the granulations, which is especially adapted to the relief of the early presence of trachomatous bodies, and which is harmless, and comparatively painless in its application, I have ceased to quake at the approach of this common and dreaded malady, and from an extensive trial, embracing cases in all stages of trachoma, I feel convinced that if carefully and thoroughly used, a speedy cure without the destructive atrophy of the conjunctiva, may be accomplished, often in a few weeks' time.

SOCIETY PROCEEDINGS.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

THURSDAY, MARCH 13, 1890.

J. HUGHLINGS JACKSON, M.D., F.R.S., President, in the Chair.

CASE OF PRIMARY GLAUCOMA AT THE AGE OF 22.

MR. SPENCER WATSON read notes of this case, in a woman, the subject of microphthalmos and hypermetropia. The patient was engaged in needlework for sixteen hours daily. When she came under observation both eyes were glaucomatous, the right eye being more affected than the left. Operation was advised, but was not consented to until four weeks later, when double iridectomy was performed. The left eye improved, and tension remained normal. A second iridectomy was performed on the right eye, but not much improvement in vision resulted.

DR. W. J. COLLINS asked if Mr. Watson had measured the corneæ in his case.

MR. BRAILEY mentioned the case of a girl, æt. 18 years, under his care, in whom glaucoma had supervened on microphthalmos; in this instance, there was almost complete iridderemia. The tension had been relieved by an equatorial scleral puncture.

MR. SPENCER WATSON replied that he had not measured the corneæ; there was no doubt about the microphthalmos.

A CASE OF SPONTANEOUS PURULENT HYALITIS NINE MONTHS
AFTER SUCCESSFUL CATARACT EXTRACTION.

DR. BERRY communicated this paper, which was read by the Secretary.

The patient, æt. 53 years, a glass-blower by trade, was operated on for cataract of the left eye on March 19, 1889. Everything went well, and he left the hospital on the eleventh day, the wound being then soundly healed. Vision with +11 D. was $\frac{20}{XL}$. Patient resumed work a month later. On December 20 he was readmitted with intense pain in, and almost complete loss of vision of, the left eye. He had left work at 4 P. M. the previous day, and was reading until 9 P. M. At midnight he was awakened with severe pain in the globe, and on presenting himself twelve hours later there was acute purulent iritis with hypopyon, T+, and vision reduced to counting fingers with difficulty. No improvement took place, and the eye was enucleated on January 2, 1890. Immediate examination of the eyeball showed extensive purulent infiltration of the vitreous, with abundant hæmorrhages in the retina, the choroid being to all appearance healthy. Microscopic sections showed that there had been accurate apposition of the lips of the corneal wound. The iris was nowhere adherent to the cicatrix, but there was a slight flat attachment to the cornea in front of it. The suppuration appeared to have commenced behind the margin of the cornea, where a few cocci were found scattered among the cells. The choroid and deeper layers of the retina appeared healthy. Dr. Berry said that the possibility of a sudden violent septic hyalitis taking place spontaneously so long after an extraction was new to him, and the case was all the more astonishing in that, not only with respect to the acuity of vision, but also from an operative point of view, it had been completely satisfactory. A somewhat similar case had occurred in Dr. Argyll Robertson's practice. Nearly eleven months after a successful cataract extraction, the eye had to be removed for suppurative panophthalmitis. This case further resembled the writer's in that the

patient was exposed to great heat. The sudden onset and malignant nature of the inflammation left no doubt that it was the result of septic infection; but as it was quite impossible that micro-organisms introduced at the operation could retain their vitality so long without showing signs of activity, there must have been some recent inoculation of the cicatricial tissue. This explanation was that adopted by Mr. Swanzy, who in 1871 published three cases in which peripheral prolapse of the iris had been followed after a prolonged interval by a spontaneous and uncontrollable purulent iridocyclitis. The presence of micro-organisms in such cases was demonstrated by Leber in an article in *Graefe's Archiv*, 1878, on "The Inter-cellular Spaces of the Corneal Epithelium;" he stated that the bursting of an attenuated portion of a peripheral anterior synechia took place either spontaneously or as the result of a trifling lesion, and infection began at this point. Dr. Berry had lately been able to confirm this supposition by the discovery of micrococci in the vitreous in a case in which purulent hyalitis took place a long time after a perfectly normal iridectomy for glaucoma simplex. Mr. Priestley Smith had recorded a case of purulent hyalitis occurring spontaneously in an eye two years after cataract extraction. In this case there had been a slight encleisis of the iris. In one mentioned by Arlt there was a prolapse of iris the size of a pea incorporated in a cystoid cicatrix, from which, after fifteen years, a sudden panophthalmitis originated.

DR. BRAILEY cited a case of spontaneous, bilateral, purulent hyalitis, which was associated with obstinate constipation, and suggested the possibility of autogenetic septicæmic infection as having a share in inducing the condition.

MR. MARCUS GUNN mentioned a case belonging to the same category in which purulent iritis and hyalitis occurred three weeks after cataract extraction, without any prolapse or adhesion of the iris, the cornea remaining clear.

MR. NETTLESHIP spoke of the importance of these cases both from a clinical and pathological standpoint. He was familiar with cases in which an eye, blind from old corneal

affection or glaucoma, suffered from violent inflammatory attacks similar to that mentioned, though whether this occurred in the absence of any previous perforation, operative or otherwise, he could not say. Though spontaneous iritis, not following operations (for example, cases of pseudo-glioma), might be due to septicæmia, the supposition did not aid the explanation of the present cases. It was remarkable that in both the instances cited the eyes had been exposed to great heat.

MR. BRAILEY said there was no doubt that some eyes suppurated without local wound, as after glaucoma which had not been operated on. Between pseudo-glioma and the present cases there was the marked distinction that in the former supuration was limited to the vitreous and retina, the choroid escaping; so that the globe, though soft, retained its bulk, whereas in panophthalmitis it quickly shrunk.

MR. WARREN TAY mentioned a case of purulent hyalitis or panophthalmitis in one eye, following the arrest of discharge from an abscess in the side. After enucleation the vitreous was found full of pus. There was no local inoculation. He also mentioned the case of a woman who lost both eyes by a condition resembling pseudo-glioma after confinement. There was shrinking of the globes; the septic disease was probably embolic.

The President alluded to an observation made by him long ago, that there appeared to be swelling of the discs in pyæmia; this might also be the case in the surgical disease.

NOTE ON THE METRE ANGLE IN LATENT AND MANIFEST MUSCULAR DEVIATIONS.

This paper, by Dr. Berry, was read by the Secretary. Dr. Berry thought that the employment of Nagel's metre angle notation as a standard of measurement in muscular deviations was not largely in vogue. If it was worth while to measure deviations at all, it was only consistent that, having adopted the metrical system of measuring refraction, we should note

the deviation in metre angles, especially as the measurement of latent squint could be made in metre angles or fractions of them as quickly as the determination of the visual acuity in the ordinary way. This was not the case with manifest deviations, but it could be said that no more time was necessary to estimate the angular deviation in metre angles than in degrees. Dr. Berry pointed out that in Nagel's notation the degree of convergence, and not merely of deviation, had to be determined, and showed that the former was in any case of squint only half the latter. The proper existing association between accommodation and convergence in the case of a squint was given by the measurement in metre angles of half the angular deviation.

ON THE IMMEDIATE EFFECT OF TENOTOMY ON THE CONCOMITANCY OF A SQUINT.

This paper, by Dr. Berry, was read in his absence by the Secretary. Dr. Berry first explained that he referred to complete tenotomy, and not to the so-called "partial" tenotomies, as to the justification of which he was more than sceptical. He had been in the habit of measuring not only the amount of the deviation of the squinting eye, but also the accuracy of the convergence (positive or negative), not only in the primary position, but also when the object of fixation was carried about 30° to either side. As soon as the scleral attachment of one of the recti had been divided, the concomitant character of the squint was lost and the degree of effect produced by the operation varied according to the direction of the fixation. For instance, after division of the right internal rectus, the effect of the operation would be greater as the fixing eye was removed from the middle line towards the left, and less when moved in the opposite direction. The greater effect to the left was obviously due to insufficiency of the right internal rectus, resulting from the operation; but why should the effect continue to diminish after the axis of the deviating eye had crossed the middle line and was directed outward?

MR. DOYNE spoke of the benefit often derived in cases of migraine by correction of errors of refraction, and asked the President if migraine might not be considered as a species of epilepsy.

The President said that, scientifically considered, he had no doubt migraine was a species of epilepsy, but that practically they were widely different, and rarely if ever interchangeable.

MR. BRAILEY and DR. JAMES ANDERSON referred to cases in which full correction of ametropia had had no curative effect upon attacks of migraine.—*British Medical Journal*.

SELECTIONS FROM AMERICAN MEDICAL JOURNALS.

ARTIFICIAL ATTACHMENT OF A DETACHED IRIS.

BY FRANK A. MORRISON, M.D., INDIANAPOLIS, IND.

It has occasionally happened during iridectomies, in consequence of unexpected movements of the eyeball while the iris is in the grasp of the forceps, that a considerable portion of this structure becomes detached at its ciliary margin.

In opposition to the usual practice of complete excision of the detached portion, the following case, together with the method of relief, is given somewhat in detail.

Mr. E., æt. 50 years, came under my charge in February, 1890, with the following history:

While undergoing a cataract operation by the von Graefe method a sudden movement of the eye detached a considerable portion of the iris at its ciliary border, but the condition was not manifest for several days after the operation.

An examination, February 12, 1890, disclosed the following condition of the eye.

About one fourth of the iris had been torn loose at its periphery and, falling across the pupil, attached itself to the pupillary margin of the opposite side and completely occluded this opening.

Dreading the effect of the removal of so large a segment in addition to what had already been taken away, the following plan was devised and put into execution: With the assistance of Dr. J. A. Haugh, a paracentesis needle was entered at a

point upon the sclerotic just behind its junction with the cornea, where it was estimated that the angle formed by the union of the line of rupture with the detached ciliary border of the iris would come in contact with the sclerotic, if the parts were in their normal position. The needle was then carried obliquely through the sclerotic into the anterior chamber and was caused to enlarge the wound slightly in its withdrawal. Very little of the aqueous humor escaped. Now gently passing a Desmarres' cystotome into the wound and across the anterior chamber, its cutting edge was used to divide the adhesions between the contiguous margins of the iris; this done the latter floated freely in the aqueous humor. Withdrawing the cystotome, a sharp Tyrell's hook was pushed carefully along the posterior surface of the iris and made to seize it at the angle formed by the rent and the detached ciliary margin, and this angle was drawn carefully into the sclerotic incision and there left, held securely by the approximation of the walls of the valve-like slit. The immediate effect was a complete restoration of the pupil to its proper shape, accompanied, of course, by an immense increase in the volume of light entering the eye. Very little reaction followed, and in the course of a few hours the iris was firmly fixed in its new locality.

Freely admitting that one case proves little, yet this one shows the possibilities of such an operation under discouraging circumstances.

If successful, an immense advantage accrues to the patient. When this accident is detected at the time of the iridectomy, whether for cataract or other causes, it is probable that the iris could be confined in the angle of the incision, if such incision has been made in the sclerotic. If, however, the incision has been made in the cornea or from its location would produce too great a traction on the iris, it would be better to make an independent puncture and proceed as above described. The presence of the aqueous humor in all stages of the operation greatly facilitates matters, and care should be taken to limit the sclerotic incision to avoid gaping of the wound.—*Weekly Med. Rev.*

THE VALUE OF OCULAR SYMPTOMS IN THE
DIAGNOSIS OF SYPHILIS.

BY S. G. DABNEY, M.D.

Professor of Physiology and Clinical Lecturer on Diseases of the Eye, Ear and Throat, Hospital College of Medicine, Visiting Surgeon to Eye and Ear Department of Louisville City Hospital.

It is generally admitted that the diagnosis of constitutional syphilis must rest upon the co-existence or history of a number of symptoms more or less indicative of that diathesis. There are a few conditions, however, which point, even in the absence of any corroborative evidence, with great certainty to syphilis. I wish to call attention to some of these which are peculiar to the eye.

There is an affection of the cornea which is by many authorities believed to be pathognomonic of inherited syphilis; all agree that it is a strong indication of this condition. The disease is a diffuse interstitial inflammation of the cornea; the cornea acquires a "ground-glass" appearance, and may become so opaque as to lower the visual power to the counting of fingers at only a few feet. Both eyes are usually affected, and the disease runs a very tedious course, from several months to several years. The iris and choroid are prone to become inflamed also; if these complications are prevented by appropriate treatment the final result is usually good. It is not rare for this symptom to be the first observed to indicate the constitutional disease, though writers on syphilis place it among the latest evidences of inherited taint. It usually occurs between the ages of five and fifteen, but has been seen as late as thirty. The following case, except that the affection began later than usual, presents a typical history:

Miss Z., æt. 16 years, consulted me lately in regard to her right eye; it was somewhat sensitive to light, but otherwise caused little pain; there was decided ciliary injection, the iris was "muddy" and the pupil sluggish; the diffusely cloudy cornea presented here and there little points of darker opacity;

the vision was reduced to counting fingers at ten feet. From this condition alone, without other symptoms and without personal or family history, the diagnosis is sufficiently certain to warrant antisyphilitic treatment, but on looking at the teeth of my patient I found the most typical Hutchinson upper middle incisors, wedge-shaped and with central notch. The mother told me that her daughter a few years before had suffered from a synovitis, which yielded to iodide of potash; an older sister had had a similar disease of the eyes which lasted about two years, but finally disappeared, leaving only a trace of corneal opacity.

Gummata in the eye are not very common, but can be occasionally recognized; they are oftenest seen in the iris, but sometimes in the ciliary region, or in the sclera further back.

The following case illustrates gunma of ciliary body and sclera:

Some six weeks ago Mrs. X. consulted me as to her left eye. I found over the upper inner section of the sclera, beginning a few lines from the corneal margin, a sharply circumscribed bulging prominence; it was very sensitive to touch and caused considerable pain; the overlying sclera was of a deep red color. The disease had begun about a week before and was growing rapidly worse. The same eye had long been blind from an extensive atrophic choroiditis involving the macula. Such an appearance was almost proof positive of constitutional syphilis, though no other evidences were to be detected at the time. The scleral bulging, with its injection, pain and tenderness, rapidly subsided under the use of mercury (*hydrargyrum cum creta*, 3 grains daily) and iodide of potash (30 grains daily). The lady told me that her first husband suffered from syphilis, and she believed had infected her; a letter recently received from her family physician corroborates this opinion.

Of plastic inflammations of the iris not less than 60% are syphilitic.

There is a condition of the vitreous body, visible with the ophthalmoscope, which points with very great probability to

syphilis. It is a cloudiness due to fine dust-like opacities, which may be seen to float about as the eye is moved in different directions. This state of the vitreous is occasioned by a chorioretinitis, nearly, if not quite, invariably of specific nature. Gummata in the choroid are sometimes seen. Hutchinson has reported a case in which this was the only sequel of a syphilis whose initial lesion and secondary eruption he had treated many years before.

Ophthalmoplegia interna, paralysis of the constrictor muscle of the iris and of accommodation should always excite strong suspicions of syphilis, unless some other cause is obvious, such as diphtheria, which, however, does not generally cause the dilated pupil, even when it produces paralysis of accommodation. This form of ocular paralysis, according to a recent writer, generally follows cases of mild, early syphilis, and consequently cases which may easily have been overlooked. I have myself within the last year seen a striking instance of this. Mr. Y., a lawyer of distinction, consulted me as to his right eye; there was mydriasis and loss of accommodative power; on asking whether he had ever had syphilis, he told me that he had; furthermore, that for the primary sore he had consulted a physician, who, after some observation of the case, assured him that he did not have syphilis; accordingly he married soon afterward. His first child presented a disease of the skin which, as it resisted ordinary measures, Dr. Bloom, of this city, was called to treat. He at once recognized its true nature, and on questioning the father was convinced that he was the subject of syphilis.

Of paralysis of the external muscles of the eye about 30% are syphilitic. There are many other diseases of the eye caused by syphilis, but I have attempted to enumerate only a few of those most important from the standpoint of diagnosis. —*Amer. Pract. and News.*

PRIMARY CHANCRE OF THE CONJUNCTIVA.

BY F. W. MARLOW, M.D., M.R.C.S.,

Professor of Ophthalmology in the Medical Department of the University of Syracuse, N. Y., etc.

The following case is thought worthy of record on account of its rarity and the perhaps somewhat unusual character of the source of infection. A fair number of cases of Hunterian chancre of the lid margin have been reported, but very few in which the sore has been situated on more remote portions of the conjunctiva. Nettleship has reported two cases, one of which I had the good fortune to see, and Wherry and Adams each one, in which the chancre was situated on the palpebral conjunctiva near the posterior margin of the tarsal cartilage of the upper lid. Beyond these I am aware of no reported cases.

Mrs. G., æt. 49 years, a widow; seen for the first time on August 24, 1886. At that date the left upper lid had been inflamed and swollen about one week; there had been sufficient pain to disturb rest, and some discharge. I found the lid much swollen, especially at the inner end, where a deep circumscribed induration could be felt. The upper lid overlapped the lower end and could not be everted. By lifting it slightly away from the eye the presence of chemosis could be made out, and also the fact that the cornea and iris were normal in appearance. There was some flaky discharge. Lead lotion and hot fomentations were ordered.

August 26.—No better; pre-auricular gland enlarged. The possibility of its being a case of primary chancre was entertained. No ulceration could be made out, however, on the conjunctiva as far as it could be exposed. The family physician knew of no possible source of infection.

I was called to see her again about ten days later. No improvement had taken place in the interval. Ulceration had now extended to the edge of the eyelid near the inner canthus, and a ragged ulcer could be seen on the palpebral conjunctiva by a partial eversion of the lid. There was consider-

able pain; the pre-auricular gland was larger, and the glands under the left side of the jaw were swollen to the size of a small orange. The fauces were congested but no ulceration was seen. There was one doubtful spot on the nose but no general eruption.

The diagnosis of primary chancre was made, and confirmed before we left the house by finding that the patient's daughter was the mother of an illegitimate child, the subject of severe and inherited syphilis. It was small in size, wizen-faced, and covered from head to foot and down to its finger tips with papulo-squamous copper-colored eruption. The grandmother (the patient) had been taking almost entire charge of the child. It seemed most probable that infection had been produced by the fingers of the child coming into contact with the eye of the patient, although we could obtain no history of this fact.

Rapid improvement took place under the local application and internal administration of mercury.

The exact site of this chancre could not be determined, but it seems probable that its starting point was in the retro-tarsal fold, rather than entirely upon the palpebral conjunctiva; for this position would better explain the chemosis and the impossibility of everting the lid. In the late stage, however, ulceration spread along the palpebral surface to the margin of the lid.—*N. Y. Med. Jour.*

CORRESPONDENCE.

SALT LAKE CITY, April 10, 1890.

EDITOR AMERICAN JOURNAL OF OPHTHALMOLOGY.—I see in your journal of August, 1889, that Dr. Henry D. Noyes, of New York, reports a case where he discovered an eye-lash in the punctum of the lower lid.

Some two months ago I felt considerable irritation in the inner canthus of my own eye for twenty-four hours. It annoyed me very much. On meeting with a fellow oculist one evening I requested him to see if there was not something in my eye. I could find nothing, though it was by artificial light and not very good. On making a search myself with the use of a head-mirror I found projecting from the upper punctum a hair—which proved to be an eye-lash—which had found its way in about half its length.

I found another in the punctum of the upper lid of a boy who was brought to me stating he had something in his eye.

Yours truly, J. J. McACHRAN, M.D.

REVIEWS.

A TEXT-BOOK OF DISEASES OF THE EYE. By Henry D. Noyes, A.M., M.D. New York, William Wood & Co. 1890.

We are just in receipt of this admirable text-book and hasten to recommend it most highly to our readers. Dr. Noyes' book has been preceded by a smaller volume which was one of the best; this, a considerably larger, one is still more so. Its

language is clear, concise and perspicuous. All the modern additions to our knowledge are embodied in the work, which gives also a large amount of material from the author's experience. It is very nicely illustrated by no less than 236 wood engravings and 11 plates, partly in black and white, and partly in colors.

ANNUAL OF THE UNIVERSAL MEDICAL SCIENCES. Issue of 1889.

Edited by Ch. E. Sajous, M.D., and seventy associate editors.

It is hardly necessary to speak of the value of such a work to every practitioner. Our readers are probably particularly interested in the department of ophthalmology. This is from the hands of Dr. Ch. A. Oliver, and will be of great help as a book of reference. It is profusely and well illustrated.

SAUNDERS' QUESTION COMPENDS. W. B. Saunders, Philadelphia. 1890.

We are in receipt of four of these little volumes: On Pathology and Morbid Anatomy, by A. Semple; on Examination of Urine, by L. Wolff; on Diseases of the Skin, by F. W. Stellwagon, and on Gynæcology, by E. B. Coagin. They are well and practically illustrated, and will be decidedly useful to students and quizz-masters.

PRACTICAL ELECTRICITY IN MEDICINE AND SURGERY. By G. A. Liebig, Ju., Th.D., and G. H. Rohé, M.D. Philadelphia and London, F. A. Davis. 1890.

In the preface to this comprehensive and nicely illustrated volume the authors state, that they have endeavored to place into the hands of the student and practitioner an intelligent account of the science of electricity; and a trustworthy guide to its applications in the practice of medicine and surgery. We think they have well succeeded.

ALT.

NEWS.

JAC. H. HOCK, born at Prague, October 31, 1831, died at Vienna, February 2, 1890.

He studied in Vienna, especially under E. von Jaeger; habilitated himself in 1872, and has enriched science by numerous contributions (on apparent myopia, on the function of the meridional fibres of the ciliary muscle, on syphilitic eye affections, the reports of his clinic, articles in Eulenburg's Encyclopædia, and a book: *Propædæutik zum Studium der Augenheilkunde*, Vienna, 1887), before he became the victim of a painful malady, from which death has liberated him.

THE NEW YORK OPHTHALMOLOGICAL SOCIETY.—The following-named gentlemen have been elected officers for the ensuing year: Dr. Samuel B. St. John, of Hartford, Conn., president; Dr. H. S. Oppenheimer, vice-president; Dr. John E. Weeks, secretary and treasurer; Dr. Charles E. Hackley, Dr. Charles S. Bull and Dr. D. B. St. John Roosa, committee on admissions.

OBITUARY.

OTTO BECKER +

BY J. HIRSCHBERG.

(*Centralblatt für Augenheilkde.*)

Otto Becker was born in Dornhof, near Ratzeburg, a small town in Mecklenburg Strelitz, on May 3, 1828. His road to scientific studies was not very smooth. The boy first learned Latin from an old lady, to whom his gratitude never ceased; when ten years ago I had successfully operated on this teacher for cataract, he wrote me letters full of warm sentiments. In 1847 he studied theology and philology at Erlangen. Like other eminent naturalists and physicians he, too, began with the study of theology. The knowledge of languages he thus brought with him when studying medicine; taste and pure language predominate in his writings, which is particularly commendable in this period when so little attention is paid to these things.

Otto Becker was a gallant student, an excellent fencer and shooter, a true friend to his associates. Nature had gifted him richly, soul and body. The impressively tall form of the blonde Northern German has been immortalized in Kaulbach's picture of the destruction of Jerusalem.

From 1848 till 1851 he studied natural sciences and mathematics at Berlin, thus fitting himself in the best possible manner for the profession which finally became the task of his life. Every one who has read with attention and care his great work on the pathology of the crystalline lens (in Graefe-Saemisch), is struck with the clearness and simplicity of the mathematical deductions which are in an agreeable contrast

with the tedious figurings of many colleagues which prove nothing, but that it was a difficult job to get through with.

He came to Vienna as teacher in the family in which it was his lot to find his true mate for life. He now studied medicine from 1854 to 1857 with untiring energy, in order to win a place in the world, he at once took up scientific research. In 1862 he was made private assistant to F. von Arlt and then clinical assistant and in 1867 he habilitated himself at the Vienna University for ophthalmology. It was extremely pleasant to all to see the friendship between teacher and pupil. Without envy and full of admiration the plain Arlt viewed the rich gifts and the innate nobility of his greatest pupil. Full of love Becker revered the old Arlt as if he were his father, and was continually studying how even in small things he could give him some pleasure, whether it was at the meetings of oculists at Heidelberg, or at Vienna at occasional visits, at the seventieth birthday of the master, or during his severe illness. We owe the biography of Arlt, which is of such great an educational value to Otto Becker.

Becker showed the same grateful admiration also for the general teacher of German oculists, A. von Graefe. When one day sitting in a restaurant in Berlin he discovered pictures of von Graefe, Donders, and Bowman which had found their way there from von Graefe's estate, he at once bought them and conceived the idea of a Graefe museum, the foundation of which he began with great zest and which a few months before his death, at last years' Heidelberg meeting, he recommended to his colleagues, in his peculiar and stirring oratory.

In the same manner he perpetuated the memory of H. Müller by publishing his works concerning the eye.

When in 1868 O. Becker was called to Heidelberg to fill the vacancy created by Professor Knapp's removal to New York, he was as yet little known as an oculist. Aside from a number of small papers (for instance, On Accommodation), a small article in Mauthner's *Classical Ophthalmoscopy*, his tests for astigmatism, the yearly report of von Arlt's clinic, he had then

only published the German edition of Donder's work "On Accommodation and Refraction." But at the beautiful seat of the Muses on the Neckar, in the finest eye clinic I have seen in the world, he has done more in his 22 years' work than most of the contemporaneous colleagues, and has adorned his name with immortal renown. His best achievement is the classical work on the pathology of the crystalline lens in the Graefe-Saenisch hand-book, of which it is one of the best parts. This has received a worthy completion by the work on the anatomy of the normal and the diseased crystalline lens which he published with his pupils in 1883. The pathological anatomy of the eye was especially studied at Heidelberg under his guidance, and an astonishingly large collection of eyeballs and microscopical slides was there accumulated.

Whoever gave O. Becker an eyeball, was certain—even if after years only—to get a complete report and excellent slides. He has educated numerous pupils in this art. Whenever, during the last years, any of the younger physicians who came to my lectures, expressed the desire to work at the histology of the eye, I sent him to Heidelberg; and every one of them was satisfied. A large Atlas of the topographical anatomy of the eye (1874 to 1878) was the result of O. Becker's anatomical labors.

Moreover, we owe to him important contributions to the chapters on tumors, on leukæmic retinitis, on the obstructions of the lachrymal drainage apparatus, on color-blindness, on myopia and others; he showed the sharp eye of the investigator, I might almost say of the sharpshooter, when he discovered the visible pulsation in Basedow's disease, since even after his discovery an experienced ophthalmoscopist could look for a long time into such an eye, before he saw the extremely slight movement.

Otto Becker was an excellent teacher. The natural gift of oratory which we had occasion to admire as well at the scientific meetings of the ophthalmologists and naturalists, as at the joyful festivities which used to follow them, did not fail him in the auditorium. His clinical work lies open and clear before

us in his report on 20 years of work of the eye-clinic of the Heidelberg university, the beautiful festival gift to the international meeting in 1888. Furthermore, what I think is of especial importance, he has educated excellent assistants, several of whom have been made professors in Germany and in other countries: a noble nature lets others partake of her riches.

Otto Becker was a fine, art-loving spirit, who not only knew how to tastefully decorate his home, but who also presented to the participants of the international meeting the copperplate of Daviel, as a beautiful memento of the days so full of scientific work and pleasures. Through A. von Graefe, a similarly amiable character the Heidelberg Congress was originated. After his only too premature death it was due to O. Becker that it was perpetuated in the same old manner. Many will feel with me, that it was seeing Otto Becker again, what gave them the greatest pleasure when they started for Heidelberg. It will be hard to replace him; almost impossible to excel him. The brilliant arrangement of the International Congress of Ophthalmologists in 1888, the first one on German soil, at which even our French colleagues were so well represented, was principally his work. The more admirable was the modesty with which he, unlike so many gifted natures, returned to the background when the work was done. Every one who had the good luck to become more intimate with him will forever keep his memory warm.

It is hard, but natural, that every necrology has to speak of the sickness and death of its subject.

Like on many great men, fortune has smiled on Otto Becker. Elated by his successes in science and art, full of pleasure at the progress of his young sons, the strong man began to fall ill. For several years he complained when taking his vacation trip, that he felt often ill enough to interfere with his work. Still his sudden death, after a short illness, came unexpected to all of us, an unthought of stroke of fate. We feel the deep pain of his family and share it; for us, too, Otto Becker is dead.

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VOL. VII.

MAY, 1890.

No. 5.

THE USE OF SKIASCOPY (*The Shadow Test*) IN THE
DETERMINATION OF REFRACTIVE ERRORS.

BY H. V. WÜRDEMAN, M.D., OF MILWAUKEE, WISCONSIN.

Without going into details in regard to the optical principles of skiascopy, I will endeavor to point out some of its advantages and applications in the determination of those forms of ametropia which require exact correction by lenses. The subject has crept into all recent text-books and works upon the eye, although in some of them¹ totally inaccurate and misleading descriptions of the procedure are given.

For a complete description of the principles involved in this method of testing the refraction of the eyes, I will refer to the

¹"Traité des Maladies des Yeux." Galezowski, 3d edition. Paris : J. B. Ballière, 1888, p. 824.

"A Manual of the Diseases of the Eye," MacNamara, 4th edition. Philadelphia: P. Blakiston, Son & Co., 1882. Pp. 502-504.

paper of Swan M. Burnett on Skiascopy,² published in 1888, and the same author's more pretentious work on Astigmatism.³

Skiascopy, like all other valuable inventions, has received its full share both of condemnation and approval. The Germans affect to look down upon the method and do not seem willing to give it even a fair trial.⁴ Such men as Fuchs, Königstein and Stellwag, of Vienna, Schweigger and Hirschberg, of Berlin, insist that the direct method of ophthalmoscopic observation is "*good enough*" for them. In discussing this subject with one of these same gentlemen, in the autumn of 1889, in the latter's clinic, he picked up an ophthalmoscope and at a distance of 20-25 cm. (8-10 inches) from the patient's eye he twisted and turned the mirror up and down, from side to side, and remarked that he "saw no shadow." Well, how could he?

Although this method of objective optometry originated in France,⁵ it has not yet in that country been awarded the place it merits. In England⁶ the shadow test is in use, although observers generally adhere to the slow and tedious method of the trial frame and lenses. It is true that the English use an apparatus, but this is so clumsy and patience-tiring in application that the chief use of the *machine* seems to be in ornamenting shelves where other relics of the past are stored. In the Eastern States⁷ skiascopy is generally used, but in the West very little is known of it.

By this method of optometry one can determine at the first glance as to a patient's ametropia and can in a moment decide

²"Skiascopy or the 'Shadow' Test for the Determination of the Refraction of the Eyes." Burnett, The Medical News, Sept. 15, 1888.

³"A Treatise on Astigmatism." Burnett, J. H. Chambers & Co., St. Louis, 1887.

⁴During my residence in Vienna in 1889, I had the satisfaction of teaching the use of skiascopy to a number of Germans and Americans in the course of a series of lectures on Refraction.

⁵The "Shadow" test was discovered by Caignet in 1873, and was named incorrectly "*Keratoscopie*" (see Recueil d. Ophthalmologie, 1873.)

⁶The English term this method "*Retinoscopy*," another incorrect name.

⁷The term proposed by M. Egger and brought into prominence by Burnett.

whether the subject is myopic, hypermetropic or astigmatic. Almost my first procedure where ametropia is suspected is to escort the patient into the dark room, where by skiascopy the *kind* and degree of optical defect may be quickly decided.⁸ Much useless testing by plus and minus glasses is thus avoided. By the shadow test complete glasses are easily fitted to the most dense person or to children.

By the use of skiascopy in conjunction with the direct ophthalmoscopic method and the test lenses, glasses can be fitted to any one with little or no questioning. Thus not only time but temper is saved. "This method is founded upon the observed fact that when the light from a flame, placed in the ordinary position for ophthalmoscopic examination, is thrown into the eye at a distance of from 3 to 5 feet from the eye, and the mirror is rotated about one of its axes, a shadow is observed to pass across the bright area of the pupil and the direction and rapidity with which the shadow moves serve as a basis for diagnosis."⁹

In emmetropia, hypermetropia and myopia under .75 D., (using the *concave* mirror of the ophthalmoscope) the movement is *against* the rotation of the mirror.

In myopia over .75 D. the movement is *with* the rotation of the mirror. The greater the degree of ametropia the slower the movement and the less brilliant is the image.

The accompanying table exhibits the changes in the appearance of the image, when the *concave* mirror of an ophthalmoscope is used at a distance of one meter from the eye.

⁸A rough method, "first suggested by Chibrt, but also by Jackson, of Philadelphia, is to move the mirror toward the eye under examination until the point of reversal is found; then the distance from the observed to the observing eye marks the far point of the eye under examination." From Burnett on Skiascopy, The Medical News, Sept. 15, 1888.

⁹Burnett, "A Treatise on Astigmatism."

<i>Refraction.</i>	<i>Direction of Movement.</i>	<i>Rapidity of Movement.</i>	<i>Brilliance of Image.</i>
Emmetropia: - - -	Against	Rapid.	Brilliant.
Hypermetropia:			
<i>a</i> : of low degree, -	"	Less Rapid.	Less brilliant
<i>b</i> : of high degree, -	"	Low.	Dull.
Myopia:			
<i>a</i> : of less than .75 D.,	"	Very rapid.	More brilliant.
<i>b</i> : of .75 D., - - -	- - -	- - -	Most brilliant.
<i>c</i> : of low degree above .75 D., - - -	With	Less rapid.	Less brilliant.
<i>d</i> : of high degree, -	"	Slow.	Dull.
Astigmatism:			
<i>a</i> : Hypermetropic,			{ Edge of image less defined in one meridian than in the other.
(simple), - - -	{ Against in both meridians.	{ Slower in one meridian than in the other.	
(compound), -	"	"	"
<i>b</i> : Myopic,			
(simple) to .75 D., -	"	"	"
(simple) over .75 D.,	{ Against in emmetropic and with in astigmatic meridian	"	"
(compound), both meridians under .75 D.,		"	"
one meridian under, one over .75 D., -	{ Against in meridian under .75 D. and with in meridian over .75 D.	"	"
both meridians over .75 D., - - -	{ Both meridians with.	"	"
<i>c</i> : Mixed,			
under .75 D. of Myopia, - - -	Both against.	- - -	- - -
over .75 D. of Myopia,	{ One meridian with, the other against.	- - -	- - -
<i>d</i> : Oblique, - - -		- - -	- - -

When the *plane* mirror is used these appearances are reserved. In Emmetropia, Hypermetropia and Myopia under 75 D., the movement is *with*, and in Myopia over 75 D., *against* the rotation of the mirror.

It will be noticed that 75 D. of Myopia is taken as a standard; and that, by reducing the appearances exhibited under the shadow test by all forms of Ametropia to those given by a Myopia of that degree,¹⁰ we are enabled to measure all forms of refractive errors. To do this it is necessary to place and replace lenses in the front of an eye until these appearances are produced. Either a trial frame and test lenses (the placing and replacing of which consumes a great deal of time), or a disk containing the proper lenses rotated in front of the eye, must be used.

Mr. Doyne, of Oxford, in the Ophthalmic Section of the International Medical Congress, held in Washington, in 1887, exhibited a disk for Skiascopy, or as he called it "Retinoscopy." This was an immense *machine*. I saw several of these affairs in London but they seemed to be seldom used.

At the Ophthalmic Section of the American Association held in Washington, in September, 1888, Dr. Burnett, of that city, exhibited a simple disk of hard rubber, containing twenty-five lenses, which was intended for use in Skiascopy. This apparatus swung upon an elbow and could be screwed to the wall of the dark room. A modification of these instruments is what I have to offer in the following:

This apparatus consists of a hard rubber disk, 4 mm. in thickness, 30 cm. in diameter, in which are concentrically placed twenty-four lenses as follows:

Plus: .25; .50; .75; 1; 1.25; 1.50; 2; 2.50; 3; 4.50; 6; 8.

Minus: .25; .50; .75; 1; 1.35; 1.50; 2; 2.50; 3; 4.50; 6; 8.

The disk revolves upon a pivot connected with brass bar¹¹ which is attached to the wall of the dark room and is easily

¹⁰A normal eye may be made .75 D. Myopic by placing a plus .75 in front of it.

¹¹The disk may also be attached to a movable stand, for the convenience of those who have no dark room.

swung out of the way when not in use. By means of a screw which can be loosened, the disk may be lowered or raised to suit height of any patient for sitting or standing examination.

In the rear of the disk, extending to either side is an angular piece of hard rubber, large enough to cover three lenses, with an aperture in the center, thus permitting the patient to look

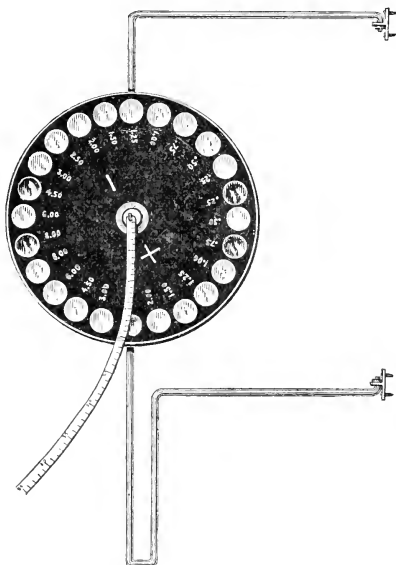


FIG 3.—FRONT OF SKIASCOPE.

through the lens desired and precluding the possibility of his using the wrong one. This piece is fastened and does not revolve with the disk.

Between the stationary piece and disk is a clip in which additional lenses may be fastened. Attached to the aperture is a rim or flange of hard rubber arranged to fit the socket of the

eye, thus permitting no ray of light to fall upon the eye, excepting that cast by the mirror in the hands of the surgeon.

A meter tape attached to the center of disk, allows the exact distance from the patient's eye to be taken. The illumination is an Argand burner attached to a universal joint.

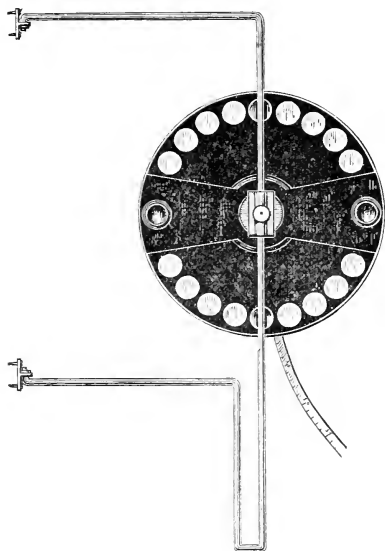


FIG. 4.—REAR OF SKIASCOPE.

In using the disk the first step is to lower or raise it to suit height of patient.

Second: To adjust the lens to right eye. Patient rotates disk backward or forward with right hand. In examination of left eye, patient simply leans forward and operator brings disk into place, then leaning backward, patient's eye is in position. Disk is then rotated with the left hand, and the operator moving back one meter, proceeds with the examination.

By means of the clip one is enabled to obtain all the combinations of lenses which are necessary for correction of ametropia. In using apparatus, I sometimes insert $+ .75$ D. in the clip which obviates the necessity of adding for myopia, or subtracting for hypermetropia. Homatropin is used where dilatation of the pupil or inhibition of the accommodation is required, although the flange on back of disk, fitting closely in

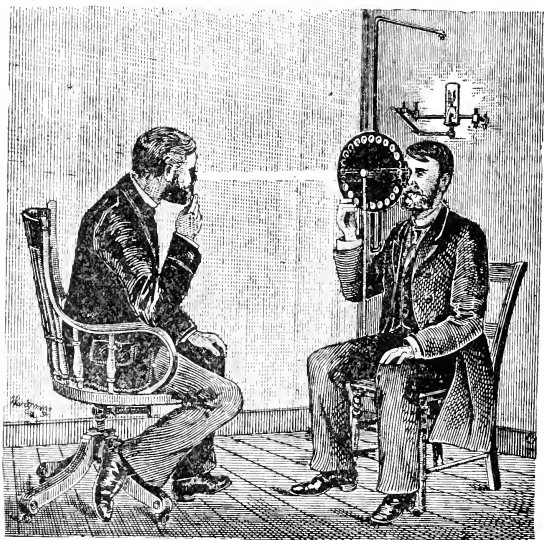


FIG. 5.—METHOD OF USING THE SKIASCOPE.

socket of eye, completely excludes extraneous light, and thus for skiascopy mydriatics are not usually indicated.

The skiascope was first made for me by Adolf Schwarz, Optiker, Spital Gasse, 4, Vienna, Austria.

I have made arrangements with Jas. A. Queen & Co., Opticians, of Philadelphia, Pa., from whom the disk can now be procured.

By skiascopy and the use of my disk I am able to measure *objectively* to .25 D. of ametropia.¹² In the determination of low degrees of refractive error I usually take the plane mirror. I do not restrict myself by any means to this one method, although it is invaluable. In examining patients for glasses, after the usual questioning I use the following method:

First. Inspection.

Second. In the dark room at 1 m. distance from eye of patient, I observe the *apparent brightness* of the lighted area of the fundus (using the *concave* mirror of the ophthalmoscope), then the *movement* of the shadow (against or with the mirror), the *rapidity* and the *angle* at which it appears to move.

Third. Examination of the fundus by the indirect method.

Fourth. Examination of the anterior structures by oblique illumination.

Fifth. Examination of the fundus by the direct method in which the refraction is determined and noted.

Sixth. Examination by skiascopy. Swinging the disk on its arm from the wall and commencing with .25 D. plus or minus (according as the shadow moves with or against the mirror), I proceed until a lens is reached which *neutralizes*, the next lens *reversing* the movement. In a case of myopia this lens is .75 D. weaker than the refraction of the eye. In hypermetropia it is the same degree stronger. For instance, a myopia of 1 D. will be neutralized by a $-.25$ D.; while a hypermetropia of 1 D. will require $+1.75$ D. Thus, in hypermetropia we *subtract* .75 D., and in myopia *add* .75 D. to the strength of the neutralizing lens. The vertical meridian is first examined and the results committed to paper, then the hori-

¹²Prof. Burnett, since the publication of his book on Astigmatism, has even enlarged his views upon skiascopy, and now considers it a most accurate method for the determination of refractive errors, particularly for those of a low degree.—(From a personal interview.)

zontal meridian, and lastly the oblique. (One meridian must be dealt with at a time or confusion will result.)

Seventh. Examination with the trial lenses, test letters and diagrams in the light room (a procedure which has been greatly facilitated by the previous methods).

Eighth. Correction by skiascopy of lenses found, the patient wearing them in the trial frame.

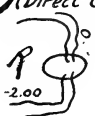
Ninth. Correction by the direct ophthalmoscopic method.

Tenth. Trial by patient for reading and distance. The *objective* methods (direct examination and skiascopy) and the *subjective* method of examination are direct checks upon each other.

The record of the refraction in a case of simple myopic astigmatism is kept as follows:


$$\begin{array}{l}
 R = \frac{6}{18} \text{ under Homatropin} \quad R = \frac{6}{18} \text{ sees } = 180^\circ \\
 L = \frac{6}{18} \quad \quad \quad \quad \quad \quad \quad L = \frac{6}{18} \quad \quad \quad = 180^\circ
 \end{array}$$

$$\begin{array}{cc}
 \text{O (Direct Ophthalmoscopic Exam.)} & \text{S (Skiascopic Exam.)}
 \end{array}$$



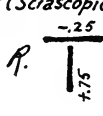
R

-2.00



L

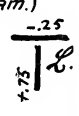
-2.00



R

-0.25

+0.75



L

-0.25

+0.75

$$\begin{array}{l}
 R - 2.00, 90^\circ = \frac{6}{6} \# \text{ (Horizontal and Vertical lines clearly seen)} \\
 L - 2.00, 90^\circ = \frac{6}{6} \#
 \end{array}$$

FIG. 6.

In a case of simple hypermetropia:

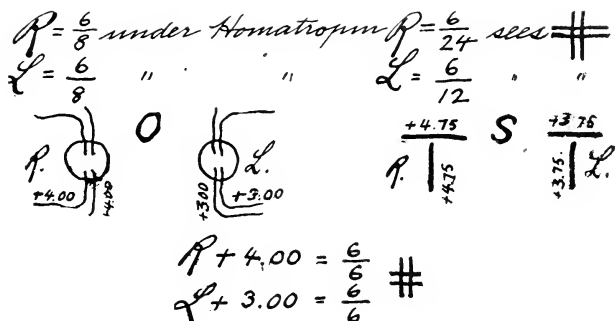


FIG. 7.

In a case of compound hypermetropic astigmatism with the axes oblique, the record is:

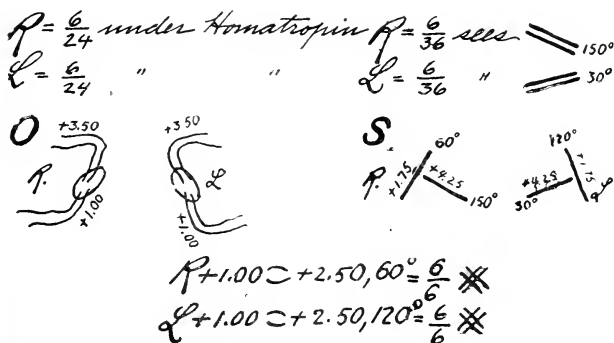


FIG. 8.

By observing these rules I am convinced that the proper correcting lenses can invariably be found.

REMOVAL OF PIECE OF STEEL FROM THE VITREOUS BODY WITH RECOVERY OF PERFECT VISION.

BY M. H. POST, M.D., ST. LOUIS.

The removal of a piece of steel from the vitreous body with a magnet is something of an old story; but the following result is so satisfactory and so exceptional, that the case may be of interest to some of your readers:

August 7, 1889, H. S., aged 18 years, was brought to our office one hour and a half after O. D. had been struck by a piece of steel, which had been knocked off from a hammer or a tool in the hands of a fellow-workman.

Examination of the eye showed a clean cut through the lower lid, near its center, and through the sclera, two and one half mm. long, and two mm. from and parallel with the corneo-scleral margin.

The ophthalmoscope showed a shining piece of metal with several air bubbles, in the upper portion of the vitreous, a little to the inner side and anterior to the intersection of the equator and the vertical meridian.

Owing to various causes operation was deferred till the next day. The conjunctival sac was washed out with the bichloride of mercury 1-5,000; atropia and cocain solution used and the eye dressed antiseptically.

The next morning the patient reported no pain; the eye was quiet and the ophthalmoscope gave no change from the day before; atropia and cocain solution again used. That afternoon the patient was placed under ether, a flap of conjunctiva was dissected from the inner quadrant of the globe, and a meridional incision was made just to the inner side of the insertion of the superior rectus. A Graefe cataract knife

was used, puncturing the sclera about one half inch from the corneo-scleral margin and cutting forward about one quarter of an inch, great care being taken not to puncture the lens.

The electromagnet was made in the ordinary way; a coil of wire, carrying a current from three bichromate of potassium cells, passing around a core of soft iron, into the end of which a soft iron point was screwed. The point used was flattened on both sides, instead of being cylindric or cone shaped.

Upon introducing the point, which had previously been allowed to lie in a solution of carbolic acid, into the vitreous a sharp click was heard, and a slight shock felt. Upon withdrawing it the piece of steel was found adhering to the point of the magnet. The piece of steel was four mm. long, two mm. broad and about one and a half mm. thick, and weighed a trifle over half a grain.

No vitreous was lost, the conjunctival sac was washed out with bichloride of mercury solution 1-5000; the conjunctival flap drawn over the scleral wound and held in place by stitches; the conjunctival sac was again washed out with the bichloride solution, and the eye dressed antiseptically.

August 11. Dressings removed, eye quiet, no pain, pupil widely dilated, media clear.

August 20. A few small floating particles in vitreous, slight infiltration of choroid at point of incision and in region where foreign body was lodged; slight infiltration at point where foreign body entered.

From this time the case progressed to perfect recovery and November 10, 1889 O. D. ¹⁴/IX.5.

It will be seen that the foreign body passed entirely through the eye and our remarkable success we attribute to the fact that neither the lens nor iris were injured, the absence of hæmorrhage into the vitreous, the promptness of the operation and the antiseptic precautions.

Dr. A. E. Ewing shared the care and responsibility of the management of the case equally with me throughout.

REPORT OF A CASE OF RECURRING EPITHELIOMA OF THE CORNEA; ENUCLEATION OF THE EYEBALL; NO RETURN OF THE GROWTH.

BY DAVID WEBSTER, M. D.,

(Prof. of Ophthalmology in the New York Polyclinic; Surgeon to Manhattan Eye and Ear Hospital, New York.)

On April 22, 1873, soon after I entered the office of the late Dr. C. R. Agnew as his assistant; he was consulted by Mr. J.P., æt. 71 years, married, an iron manufacturer, on account of a recurring growth upon his right cornea. Some four years previously a growth which was supposed to be pterygium had been removed by a surgeon in the city where he lived, and the same surgeon had excised a growth which had recurred in the same place some three years later. After the second operation a caustic had been applied to the site of the growth with a view of destroying any portions of the growth that had escaped the knife. Some inflammatory reaction followed the last operation and there was a discharge from the eye for four or five months, and then the growth began to appear again and had steadily increased.

The patient stated that the sight of the affected eye, which had never been nearly as good as that of the other, had begun to be obscured by the supposed pterygium about a month before its first removal, thus showing that it had encroached upon the cornea at that time.

When we saw him there was a fleshy looking growth extending horizontally across the cornea and leaving about two-fifths of its upper portion transparent. Through this transparent portion of the cornea it could be seen that the pupil

was clear and the iris uninvolved. There was also a very slight margin of clear cornea below. The conjunctiva on both sides of the tumor was injected and, on the nasal side, considerably thickened.

The secretions from the eye were ichorous and the skin of the lower eyelid was shining and excoriated.

The patient said that the eye had never been painful but had annoyed him much by itching and by feeling as though there was something in it.

Dr. Agnew made a diagnosis of "Recurring Epithelioma of the Cornea" and advised enucleation. This the patient assented to and, on the following day, the patient being under ether, Dr. Agnew, after having slit the external canthus, excised the eyeball with all of the ocular conjunctiva that seemed to be in the slightest degree involved in the disease. Nearly all the ocular conjunctiva having been removed, it seemed probable that the patient would never be able to wear an artificial eye. Moreover, Dr. Agnew feared that even if there should be a suitable cavity for an artificial eye, the wearing of one might produce a local irritation and induce a recurrence of the growth. He therefore concluded to seal up the cavity of the orbit, so as to prevent the inversion of the eye lashes and irritation of the stump. This he accomplished by scalping the tarsal borders from the outer canthus to the lachrymal puncta.

The patient had an attack of *cholera morbus* during convalescence, but the eye healed well, the cavity being permanently closed, all except a small opening at the inner canthus, which remained open for the escape of tears or other secretions.

A letter to Dr. Agnew, dated June 19, 1880, states that Mr. P. recently died of abscess of the anterior perineum "and that he never developed anything malignant after the removal of the eye." It is to be regretted that the eye was spoiled before it could be examined by the pathologist, but there can be little doubt of the nature of the growth.

A CASE OF SCLERO CORNEAL TUMOR.

BY FRANK TRESTER SMITH, A. M., M. D., CHATTANOOGA, TENN.,
Formerly Ass't. Surgeon New York Ophthalmic and Aural Institute.

Cases of sclero-corneal tumors are not rare but the following presents some unusual features so that its recital may be of interest :

J.V.Jordon, æt. 54, years Cleveland, Tenn., presented himself for treatment at the Chattanooga Medical College, October 31, 1889, with the following history: A small blister appeared near the inner canthus of the right eye about December 1, 1888. This was not painful for two months but had neuralgia in the head during that time. At the end of two months the eye became painful, which was worse when he caught cold. The pain gradually increased and had been almost unendurable for the past two and a half months. Sleep was greatly interfered with and the other eye had become irritable and intolerant to light. Had been unable to do any work for six or seven months. Both eyes had been "sore" fifteen years before. This left the sight of the right eye somewhat defective. No history of cancer in the family. Mother died of consumption, also a sister. Two children died of diphtheria or croup. No evidence of any special dyscrasia.

An examination showed at the sclero-corneal margin near the inner canthus a tumor with a base about equal to the surface of the cornea. It covered the latter to about one-third of its extent. The surface was rough and of a dirty pearly color. At the apex some dark bluish pigment could be seen under the surface. The tumor was sessile. At no point could a small probe be passed under it. The surface could be readily indented as though it contained fluid. While passing a

probe over the apex the wall gave way and a bead of vitreous like fluid escaped. The curvature of the ball up to the edge of the tumor was normal. The appearance suggested an epithelioma covering. The ball very tender. Photophobia prevented a test of vision.

The left eye was intolerant of light and could not be used for any length of time without pain.

Enucleation of the right eye was advised and was performed before the class the next day. Healing was rapid and the patient was allowed to go home in five days and went to work nine days after the operation. In two weeks a glass eye was fitted on the stump which has been worn since. The symptoms were entirely relieved and the patient has felt better than he has for over a year. In this case the indications for the operation were the intense pain, the suspicious appearance of the tumor, and the symptoms of sympathetic irritation in the other eye, either one of which would have suggested enucleation.

DESCRIPTION OF THE HISTOLOGICAL CONDITIONS OF THE
TUMOR DESCRIBED BY DR. F. T. SMITH.

BY ADOLF ALT, M.D.

The specimen sent to me by Dr. Smith was probably one-quarter of the eyeball, with one-half of the tumor.

Macroscopical appearance.—What appears to be the tumor has a hollow base situated over the ciliary region. Iris, ciliary body, choroid and retina with some vitreous body are seen to enter a cavity forming the larger part of the tumor. There is no lens. It, therefore, makes the impression as if we had to deal with a ciliary staphyloma, caused by a trauma which had led to prolapse of the interior membranes through an opening in the sclerotic in the ciliary region. This looked so much like the simple explanation of the conditions found, that I was almost ready to return the specimen to the Doctor, telling him, that the tumor was simply a staphyloma. There was only one

condition which prompted me to make some microscopical sections, namely, the conjunctival covering, so to speak, the sac of the hernia, was comparatively thick and not smooth on its surface. After having embedded the specimen in celluloidin, I made a number of sections which revealed somewhat unusual conditions.

Microscopical examination.—Under the microscope it is at once clear that the macroscopical appearances were correct, as far as the prolapse of the internal membranes of the eye is concerned. In the—so to speak—hernial sac, the lining nearest the surface is formed by the choroid, which is not even very much altered, and the ciliary body and peripheral portions of the iris. In the cavity thus formed the retina and some remnants of the vitreous body are lying more or less loosely.

The most interesting part of the tumor is the outer covering of it. This latter consists almost totally of epithelial cells held within a very loose network of connective tissue. Pearl nodules are very frequent.

Thus, it is plain that we have, after all, before us an epithelial tumor. It is, however, of rather an uncommon appearance. The question now remains, which of the two conditions was the primary one, the epithelioma or the staphyloma? I am inclined to think the latter.

CORRESPONDENCE.

CENSUS OF HALLUCINATIONS.

EDITOR AMERICAN JOURNAL OF OPHTHALMOLOGY.—May I ask for the publicity of your pages to aid me in procuring co-operation in a scientific investigation for which I am responsible? I refer to the *Census of Hallucinations*, which was begun several years ago by the "Society for Psychical Research," and of which the International Congress of Experimental Psychology at Paris, last summer, assumed the future responsibility, naming a committee in each country to carry on the work.

The object of the inquiry is twofold: 1st, to get a mass of facts about hallucinations which may serve as a basis for a scientific study of these phenomena; and 2nd, to ascertain approximately the *proportion of persons* who have had such experiences. Until the average frequency of hallucinations in the community is known, it can never be decided whether the so-called "veridical" hallucinations (visions or other "warnings" of the death, etc., of people at a distance) which are so frequently reported, are accidental coincidences, or something more.

Some 8,000 or more persons in England, France and the United States have already returned answers to the question which heads the census sheets, and which runs as follows:

"Have you ever, when completely awake, had a vivid impression of seeing or being touched by a living being or inanimate object, or of hearing a voice; which impression, so far as you could discover, was not due to any external physical cause?"

The "Congress" hopes that at its next meeting, in England, in 1892, as many as 50,000 answers may have been collected. It is obvious that for the purely statistical inquiry, *the answer "No" is as important as the answer "Yes."*

I have been appointed to superintend the Census in America, and I most earnestly bespeak the co-operation of any among your readers who may be actively interested in the subject. It is clear that very many volunteer canvassers will be needed to secure success. Each census blank contains instructions to the collector, and places for twenty-five names; and special blanks for the "Yes" cases are furnished in addition. I shall be most happy to supply these blanks to any one who will be good enough to make application for them to

Yours truly,
(PROFESSOR) WM. JAMES,

Harvard University.

Cambridge, Mass.

"MONATSBLATTER F. AUGENHEILKUNDE."

EDITOR AMERICAN JOURNAL OF OPHTHALMOLOGY.—Herewith I announce to my friends and colleagues, and especially to the readers of the *Monatsblätter für Augenheilkunde*, that I moved my residence from Rostock to Munich, and I further ask them to please send all communications, letters and journals in future to Munich, Bavaria.

W. VON ZEHENDER.

SOCIETY PROCEEDINGS.

AMERICAN MEDICAL ASSOCIATION.

LIST OF OFFICERS AND PRELIMINARY PROGRAMME OF THE FORTY-FIRST ANNUAL MEETING.

Held at Nashville, Tenn., May 20, 21, 22 and 23, 1890.

SECTION OF OPHTHALMOLOGY.

CHAIRMAN.—S. C. Ayres, Cincinnati, O.

SECRETARY.—E. J. Gardiner, Chicago, Ill.

1. Address by the Chairman.
2. The Uses of Jequirity, by Wm. Cheatham, Louisville, Kentucky.
3. Jequirity in the Treatment of Diphtheritic Conjunctivitis, by A. E. Prince, Jacksonville, Ill.
4. A Danger in the Use of Jequirity Heretofore Unmentioned, by T. E. Murrell, Little Rock, Ark.
5. Enucleation in Panophthalmitis, by J. E. Sinclair, Nashville, Tenn.
6. Functional Nervous Diseases, by A. R. Baker, Cleveland, O.
7. Sympathetic Ophthalmia, by C. M. Hobbey, Iowa City, Iowa.
8. Report of a Case of Sympathetic Inflammation Two Weeks after Enucleation of the Injured Eye, by Geo. H. Goode, Cincinnati, O.
9. Tobacco; Its Effects upon the Eye-Sight, by Flavel H. Tiffany, Kansas City, Mo.

10. A Simple and Reliable Astigmometer, by F. C. Hotz, Chicago, Ill.

11. The Necessity for More Care in the Setting of Lenses when Prescribed for the Correction of the Eye Faults, by J. J. Chisolm, Baltimore, Md.

12. Some Observations on the Correction of Low Degrees of Astigmatism, by T. E. Murrell, Little Rock, Ark.

13. Progressive Hypermetropic Astigmatism, by W. T. Montgomery, Chicago, Ill.

14. A Clinical Study of a Series of Cases Exhibiting Slight Macular and Perimacular Changes, by G. E. de Schweintzi, Philadelphia, Pa.

15. Report of a Case of Transplantation without a Pedicle for Cicatricial Ectropion. Blepharoplasty by Wolf's Method, by J. Morrison Ray, Louisville, Ky.

16. Some Points Worthy of Consideration in the Operation for the Extraction of Cataract, by J. W. Wright, Columbus, O.

17. Case of Pemphigus of the Eyelids, by D. Emmett Welsh, Grand Rapids, Mich.

18. Tests of Visual Acuteness and the Standard of Normal Vision, by Edw. Jackson, Philadelphia, Pa.

19. (a) Report of a Case of Left Lateral Homonymous Hamianopsia Associated with a Wound of the Occipitoparietal Region of the Right Side of the Head.

20. (b) Exhibition of an Instrument for the Measurement of the Radius of Curvature of Lenses, by R. Tilley, Chicago, Illinois.

21. The Amblyopia of Strabismus, by Jno. F. Fulton, St. Paul, Minn.

22. The Increase of Blindness in the United States and the Importance of its Prevention, by J. L. Minor, Memphis, Tenn.

23. Eye Strain as a Cause of Headaches, by B. J. Baldwin, Montgomery, Ala.

24. The Full Correction of Hyperopia with Convex Glasses, by W. Franklin Coleman, Chicago, Ill.

25. Treatment of Conjunctivitis Granulosa, by Peter D. Keyser, Philadelphia, Pa.

26. A Case of Static Lenticular Astigmatism, Acquired by Long-Continued Use of Spectacles Having a Faulty Position, by George Frothingham, Detroit, Mich.

27. (a.) Hæmorrhage after Cataract Extraction; (b) Boracic Acid and Massage in Pannus, by C. R. Holmes, Cincinnati, O.

INTERNATIONAL MEDICAL CONGRESS.

SECTION OF OPHTHALMOLOGY.

The following papers have, so far, been entered on the programme :

Manz (Freiburg). The congenital coloboma of the optic nerve.

Raehlmann (Dorpat). Demonstration of microscopical slides on "sclerosis of the retinal" arteries as the cause of sudden blindness.

John Weeks (New York). The pathology of acute contagious conjunctivitis.

A. Knapp (New York). On the treatment of the capsule during and after extraction.

Nieden (Bochum).

1. Agoraphoby and restriction of the visual field.
2. Demonstration of a self-registering perimeter.

Lyder Borthen (Fronthjem). Exhibition of an ophthalmoscope.

Pflüger (Bern). Ophthalmometrical observations.

Chibret (Clermont-Ferrand). The geographical distribution of trachoma; relative immunity from varicella.

(Formation of an international society of ophthalmological geography).

Fuchs (Vienna). The origin of pterygium.

Laqueur (Strasburg). Case of binocular embolic iridocyclitis after influenza.

Swan M. Burnett (Washington).

1. Racial influence in the etiology of trachoma.

2. A metric system of numbering and measuring prisms, with exhibition of an instrument for testing prisms.

Cohn (Breslau).

1. On photographing the interior of the eye.

2. On pernicious myopia.

Nuel (Liège). Demonstration concerning the endothelium of the anterior chamber of the eye.

NEWS.

THE DEATH OF DR. HENRY S. SCHELL.—Dr. Henry S. Schell, of this city, died of chronic Bright's disease on Saturday, March 15, 1890, at San Diego, California.

After taking the degree of A.B. and A.M. he was graduated from the Medical Department of the University of Pennsylvania in 1845, became resident physician at the Episcopal Hospital, and first lieutenant and assistant surgeon U. S. A., 1861. In 1862 he was selected a medical inspector, Centre Division of the army of the Potomac, and in 1863 medical inspector, Department of the South, U. S. A. He was brevetted captain and major U. S. A. March 13, 1866, for faithful and meritorious services during the war, and lieutenant colonel, September 28, 1866, for meritorious and distinguished services at Tybee Island and Savannah, Ga., when cholera prevailed.

Dr. Schell was a member of the Loyal Legion, of the Union League, of the Philadelphia College of Physicians, of the Academy of Natural Sciences, of the American Ophthalmological Society and other associations.

The funeral took place at the Church of the Assention, the body being cremated at Germantown.

The editor of this journal announces to his friends, that he has removed his office to 3036 Locust street.

SELECTIONS FROM AMERICAN MEDICAL JOURNALS.

THE USE OF FLUORESCEIN AS A MEANS OF DIAGNOSING LESIONS OF THE CORNEA.

BY R. L. RANDOLPH, M. D.,

Assistant Ophthalmic and Aural Surgeon to the Johns Hopkins Hospital and Dispensary.

A paper read before the Johns Hopkins Hospital Medical Society, March 3, 1890.

In the November and December numbers of the *Centralblatt f. praktische Augenheilkunde*¹ is to be found an article by Dr. Thomalla, of Friedland, on coloring the cornea with fluorescein, as a means of diagnosing or detecting lesions of this portion of the eye. According to the author, Dr. Straub, a Netherland army surgeon, first discovered the fact that a solution of fluorescein, when dropped upon a portion of the cornea which was deprived of its epithelium, would color this spot a deep green and leave the rest of the cornea unchanged.

For the past two months in the eye clinics of the Johns Hopkins Hospital and the Presbyterian Eye and Ear Charity Hospital, I have been testing the value of this method of diagnosing corneal lesions. The experiments numbered over a hundred and have led me to positive conclusions.

Fluorescein is a red powder soluble in water and belongs to

¹Ueber die Färbung der Erkrankten Hornhaut mit Fluorescein und die Verwerthung dieser Färbung bei Unterscheidung von Diagnosen und Differential Diagnosen. Von Dr. Thomalla in Friedland, "Centralblatt f. prak. Augenheilk.," November u. December, 1889.

that class of substances which are found as products of coal tar distillation. I employ a solution of 10 grains of the powder to the ounce of water, to which is added 15 grains of the bicarbonate of soda.

I have never known the solution to have an irritating effect, and I have used it in the most intense forms of corneal inflammation. The portions of the cornea stained retain the color from half an hour to several hours. The solution produces not the slightest impression upon the healthy cornea. I have always found that when positive defects in the corneal epithelium existed, in other words where there was actual loss of substance, the coloration was more apparent. So long, then, as it is possible to color any portion of the cornea, we may be certain that some lesion still exists. In excoriations of the cornea positive results were the rule. One case I remember particularly where the cornea had been scratched by a blow from a twig, and where the extent of the excoriation was scarcely visible to even oblique illumination. Every detail of the wound and every minute point, where the epithelium had been removed, was clearly brought out by a drop of the fluorescein solution. In ulcers of the cornea positive results were always obtained. In simple superficial keratitis the coloration was much less distinct than when this disease was associated with an ulcer. In parenchymatous keratitis the results were invariably negative. In three cases of iritis uncomplicated with corneal trouble I failed to obtain any coloration. In two other cases of iritis of syphilitic origin where the cornea was involved, superficially as well as interstitially, marked coloration was observed. In two cases of acute glaucoma the result was absolutely negative.

In foreign bodies in the cornea no matter how small the foreign substance was, its position and size was located to a nicety. Here the coloration was immediate and distinct, showing itself by a green ring just around the foreign body. In phlyctens of the conjunctiva the color was rather yellow than green. Only in those cases where the phlycten was located on the limbus of the cornea and the latter had been

involved to some extent, was there any positive green coloration to be seen. Pterygia and pinguiculæ gave negative results. With the exception, then, of phlyctenular conjunctivitis, the solution is inapplicable to any of the other forms of conjunctival inflammation. As to the value of the solution as an aid in diagnosing such a disease as glaucoma, an interesting example of which Dr. Thomalla gives in his paper, I am unable to speak except from a negative point of view, as I have only experimented upon two cases. Whether in a series of cases of supposed acute glaucoma or where an attack of glaucoma is thought to be imminent, this solution will reveal disturbances in the cornea which so frequently attend this disease, and thus establish the diagnosis, I have very grave doubts. I have yet to see the cornea of an eye affected with acute glaucoma take on any coloring whatever. And furthermore, I have never observed any distinct coloring of the cornea, unless there exist some lesion or defect in the anterior epithelial layer. That cases of glaucoma do often occur where not only the anterior epithelium but the entire cornea is involved, is a well-known fact, and I am sure that such cases would take up the coloring matter. But it is quite evident that in this class of cases the solution would have no diagnostic value.

I think then that when one is accustomed to the use of the solution, in other words understands that where the coloration is produced the anterior epithelium is involved, the agent is of value in detecting, with accuracy, lesions of this part of the cornea. Ulcers so small that it is impossible to see them by diffuse daylight, are brought out with perfect distinctness, quite as clearly indeed as under oblique illumination, and I can readily believe that small points, which it is possible to overlook even with the oblique illumination, would invariably be revealed by a drop of the solution and, moreover, in half the time that it takes us to subject a patient to the former method. In minute ulcers of the cornea in very young children, where the blepharospasm and photophobia are frequently so intense, that the lids have to be forced apart in order to get

a view of the eye-ball, and then the latter is rolled about so continuously and the cornea flits so rapidly before our eyes, that we are obliged to simply infer from the attendant symptoms the nature of the trouble without actually seeing the lesion itself, a drop of the solution will locate the disease and its extent, and bring it out distinctly so that it can be seen, no matter how fast the eye-ball moves about. In such cases I am inclined to think that the fluorescein solution will be a help in establishing a diagnosis. I am using the solution every day and find it useful in bringing to light lesions of the cornea so small as to be readily overlooked in the hurry of a crowded clinic. Clinical experiments seem to show that positive results are only to be seen when there is some lesion or break in the anterior epithelium of the cornea. Troubles beneath the corneal surface give vague and hence unreliable results. Two of my colleagues on the staff of the Presbyterian Eye and Ear Hospital, Drs. Harlan and Woods, have been co-operating with me in trying the solution, and their views coincide entirely with mine.

I find in experiments on animals that if I simply rub the cornea gently with my fingers two or three times, enough epithelium is removed to show marked coloration on instillation of the fluorescein. This fact, no doubt, explains why slight insults to the eye-ball are attended with so much pain. However slight the mechanical force employed, a layer or two of epithelium has been removed, and hence the lachrymation, pain and all the symptoms of ciliary irritation. On scratching the cornea with a pin and dropping the solution upon the wound, the green coloration makes its appearance along the line of the scratch and from this line diffuses itself into the surrounding tissue. The deeper the scratch the further will the green color spread itself out into the cornea, and in some cases I have seen almost the entire cornea colored green. This tendency to diffusion of the coloring substance is far less marked if seen at all in inflammations involving the anterior epithelium. In ulcers, for example, it matters little how often the solution is dropped upon the ulcer, the green color re-

mains at the seat of the ulcer, and shows no disposition to spread itself to remote parts of the cornea, and I think the reason is because around the margin of the ulcer all the entrances into the interlamellar canals and lacunæ are blocked up or infiltrated with round cells and leucocytes, and hence a mechanical obstruction is offered to the passage of the fluorescein out into the healthy tissue. When a healthy cornea is scratched, many of these canals are cut across and the divided ends remain open, and into these openings passes the fluorescein solution just as water does into the interstices of a sponge.

If the solution of fluorescein be placed upon the cornea of a recently killed animal, a diffuse greenish color of the cornea is produced as soon as the corneal epithelium becomes loosened and macerated, a change which, as is well known, makes its appearance in a short time after death. This reaction then is an interesting test of the onset of these early post mortem changes in the corneal epithelium.

I have examined microscopical sections of the fresh corneæ of animals which have been scratched or injured so as to bring out the characteristic color with fluorescein. It is necessary to examine these sections, which were made from the frozen cornea, without the addition of water or salt solution, as this rapidly extracts the color. In frozen sections of the injured cornea, colored before removal of the eye with fluorescein, it is observed that the color, which, by transmitted light, has a reddish hue, is diffuse and shows no especial affinity for definite histological elements in the living cornea such as the nuclei of the cells.—*Johns Hopkins Hospital Bulletin.*

BILATERAL ORBITAL GUMMATA.

BY T. C. EVANS, M.D.,

Demonstrator of Anatomy in the Hospital College of Medicine, Visiting Surgeon to the Eye and Ear Department of the Louisville City Hospital, Louisville, Ky.

Susan B., colored, æt. 29 years, came to my office October 17, 1889, suffering from binocular exophthalmia, the left eye being the most prominent; the globe, together with its mass of hypertrophied conjunctiva, protruding far beyond the free margin of the lids, impinging on the nose and hanging well down upon the cheek. The cornea had become dry and shrunk from exposure, and looked like a horny crust adhering to the superior and outer portion of the protruding mass. The tumor was freely movable, there being no adhesions either between the conjunctiva and globe or between the lids and the mass. The globe could be easily defined; the tension was apparently normal. The right eye was pushed forward and slightly outward; the inferior cul-de-sac was obliterated by a roll of hypertrophied conjunctiva; the lower lid was everted and pushed downward by this mass of tissue, which was covered by a hard, thick crust formed by dessicated mucus and conjunctival secretions. The pupil was dilated *ad maximi*. The cornea was quite hazy from exposure. It was impossible to get a distinct image of the fundus. Enough, however, could be made out to ascertain that the retinal vessels were engorged, but not tortuous, showing that whatever produced the exophthalmus did not exert much pressure on the optic nerve. The upper lid was œdematous, with a tendency to ptosis. The protrusion was too great on the lids to completely shield the cornea, which was already hazy, as before stated. Vision was still fairly good; by holding the lids open with her hand she could count fingers at fifteen feet. The line of the protrusion was a little external to the normal axis in each eye, but the deviation was not marked, as is usually the case in orbital tumors. Examination of the nasal cavities, vault of the pharynx, antri and frontal sinuses yielded nega-

tive results. The ocular movements were necessarily much restricted from the degree of the protrusion, but no paralysis could be detected. Aside from being a bilateral affection, there was nothing characteristic about the exophthalmus, and no evidence of malignant or specific complications. The hypertrophied conjunctiva and connective tissue, the edema of the lids, together with the other symptoms, were all the natural belongings of ptosis from any cause. The accompanying cut (1), made from a photograph, shows tolerably well her condition, except in the right eye the size and shape of the conjunctival mass is not distinctly shown. The protrusion of the right eye was also much greater than would appear from the cut. The patient stated that she had first noticed the trouble about six months previous to the time she came to me, but had never had it examined or treated at all, and that both eyes were affected simultaneously. She was ignorant and indifferent, so that an intelligent history could not be obtained. There was a slight enlargement of the thyroid gland, the enlargement being more perceptible to touch than to sight. There was no disturbance of the heart's action, either in rhythm or frequency. Her general health was apparently good; her appetite was good, and she was well nourished. She admitted having had syphilis ten years ago. She had one child, nine years old, which had congenital syphilis. She also had had a number of abortions. There were also traces of syphilitic lesions in the pharynx. Taking into consideration the fact that the affection was bilateral, the extent and direction of the protrusion, the absence of pain, the normal position of the retinal vessels, together with the slight enlargement of the thyroid gland, I made a diagnosis of exophthalmic goitre, notwithstanding the fact that there was entire absence of all cardiac symptoms, which Flint says is the only constant symptom in the disease. Either the hypertrophy of the gland or the exophthalmus may be wanting, but the heart symptoms never. Neither was there any retraction of the upper lids, nor was there any nervous excitement or dyspnœa. As the case seemed quite a unique one, I showed it to two other ophthal-

mologists, both of whom concurred in my diagnosis. I sent the patient to the City Hospital, where, on October 20, I enucleated the left eye. After enucleating the eye I took a strong pair of scissors and excised the pendulous mass of conjunctival tissue which hung from the inferior cul-de-sac down upon the cheek. I then seized the mass in the right eye with my fixation forceps, and, dissecting it up from the sclera, removed it entirely. After the mass was removed I tried to close the wound in the conjunctiva with sutures, but the membrane was so badly disorganized from exposure that the stitches would not hold; so I left it to heal by granulation. Both eyes were dressed with compresses and roller bandage. Chloroform was the anæsthetic used, which she took without a single unfavorable symptom. This was another point against the diagnosis of exophthalmic goitre, as it is well known that patients suffering from this disease take all anæsthetics badly. While I am a firm believer in the superiority of chloroform over all other anæsthetics, I confess to have given it in this case with much fear, if not trembling. The patient was not given any treatment except a hypodermic of morphine. On removing the dressing, forty-eight hours after the operation, I found the discharge from the left orbit very profuse and offensive. After cleansing out the cavity I pressed my finger into the orbit. Instead of the uniform hypertrophy of the adipose cellular tissue of the orbit, together with the engorged and dilated blood-vessels, I found a distinct and well-defined tumor about the size and shape of a small almond, and occupying the space between the entrance of the optic nerve and the inner canthus. It was of a yellowish white color; the outer portion was hard and fibrous, and contained a few blood-vessels. It was movable, and had no connection either with the periosteum or the lids, but seemed to lie embedded in the connective tissue of the orbit. No attempt was made to remove the growth, except a small section for microscopic examination. The protrusion of the right eye had not been lessened by the pressure, though the haziness of the cornea had disappeared while the eye was closed. From the gross appearance of the tumor in

the left orbit I was convinced that, instead of an atypical case of exophthalmic goitre, I had to deal with a case of syphilitic gummata of the orbit. She was ordered iodide of potassium, beginning with twenty grains three times a day. In forty-eight hours there was quite a perceptible improvement. The exophthalmus of the right eye was lessened, the tumor of the left orbit was smaller, while the œdematous condition of the lids had disappeared rapidly. The dose of the iodide was steadily increased, until on the tenth day she was taking ninety grains three times a day. The improvement was now so rapid that I did not think it necessary to further increase the dose. The maximum dose of ninety grains, however, was kept up as long as she stayed in the hospital, without any gastric disturbance or any symptoms of iodism. The pupil remained dilated after the exophthalmus had disappeared. It contracted readily on the instillation of eserine, and did not again dilate when the drops were discontinued. The long-continued exophthalmus and œdema produced an atonic condition of the right upper lid, which resulted in entropion after the parts assumed their normal proportions. To relieve this I removed an elliptical fold of the integument and united the wound with sutures.

Cut No. 2 represents the condition of the patient when she was discharged from the hospital, just one month after the operation. I submitted the specimen to Dr. Dugan for microscopical examination. He reports as follows:

"Dear Dr. Evans: The tissue you sent me to examine I found macroscopically to be of a yellowish-white color and very soft. Microscopically the outer part of the tissue presented a distinctly fibrillated matrix filled with round cells, while the central or inner part was made up largely of granular matter, with some fat granules, shrunken cells, and poorly outlined bands of fibrous tissue.

W. C. DUGAN, M.D."

In making a hasty review of the literature of the subject, I have been unable to find a reported case of bilateral gummata

of the orbit. Dr. W. W. Seeley reported a case of gummy tumor of the left orbit to the American Ophthalmological Society in 1885, with microscopic specimens of the growth. The diagnosis, however, was not made until the eye was enucleated. Dr. Tangeman, of Cincinnati, reported a case in 1887 (*Lancet-Clinic*) of gummy tumor of the right orbit. In his case diagnosis was made early, and by vigorous course of treatment the eye was entirely restored. Very few of the text books, either on diseases of the eye or on syphilis, even mention the subject. Those that do mention it dismiss the subject in a few words. Dr. Noyes merely says: "As to gummy tumors growing in the orbits, nothing special need be said; that their bulk must displace the eye-ball and that they may otherwise interfere with its functions is self-evident." Nettleship says: "Nodes in the orbit (whether cellular or periosteal) occur but rarely." Loring says: "I never met with a case of exophthalmus dependent on this cause during my many years' connection with the New York Eye and Ear Infirmary." Alexander, in his report of 4,383 cases of syphilis of the eye and its appendages ("Syphilis und Auge," Wiesbaden, 1889), does not report a case of orbital gummata. I have kept the case under observation since her dismissal from the hospital. Up to this time (January 15, 1890) there has been no return of the growths. The movements of the left eye are normal; the pupil responds readily to light; the haziness has entirely disappeared from the cornea and vision is normal.—*The American Practitioner and News*.

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CONTRIBUTIONS TO OPHTHALMIC SURGERY.

BY DAVID WEBSTER, M.D., NEW YORK,
Professor of Ophthalmology in the New York Polyclinic, etc.

I. ATROPHY OF EYEBALL FROM INJURY; ENUCLEATION FOR
SYMPATHETIC IRRITATION EIGHT YEARS AFTER.

January 24, 1874. Mr. C. C., æt. 16 years, of Louisville, Kentucky, was struck on the right eye by a piece of rock, thrown by another boy, when he was 7 years of age. The sight was destroyed and a painful inflammation set in, resulting in atrophy of the eyeball. The cornea is semi-opaque and there is a cicatrix extending across its lower third, terminating in the ciliary region on both sides, and at its nasal extremity it looks as if there were a foreign body embedded. The eye is reddened, tender on pressure, and sometimes painful. The left eye has never been very strong since the injury. For the last three months it has been growing weaker, and the light gives it a good deal of trouble. The ophthalmoscope shows congestion of the optic disk and of the retina and choroid. $V.=\frac{20}{xx}$; Hm. $\frac{1}{4}$, A.= $\frac{1}{42}$. There is slight conjunctivitis of both eyes. He is fond of reading, hunting, and boxing, by which his father thinks he has injured his eyes.

As there was evident sympathetic irritation it was thought best that the atrophied eyeball should be removed. Accordingly, I administered ether and Dr. C. R. Agnew enucleated the eye. The patient recovered and returned home in a week with an artificial eye.

I saw him again on September 26, 1881. He had had no further trouble with his left eye except such as was due to his hypermetropia; of which he now had a manifest of $\frac{1}{36}$. Glasses $+\frac{1}{36}$ were therefore ordered for him.

II. PIECE OF GUNCAP IN VITREOUS FOR FIFTEEN YEARS; EYEBALL ENUCLEATED FOR CHRONIC, INFLAMMATORY GLAUCOMA WITH THREATENED SYMPATHETIC INFLAMMATION.

February 6, 1874. Amos S., æt. 48 years, marketman, got a bit of guncap into his right eye, while shooting off a pistol, fifteen years ago. The eye has always retained some vision. It has been more or less reddened and painful for the last four or five months, and the vision is now reduced to perception of light. The tension is increased, the cornea is hazy, the iris is tremulous, and the supposed foreign body can be seen indistinctly, flopping about in a disorganized vitreous humor. There is also scleral staphyoma. The pupil dilated and immovable.

Left eye, vision= $\frac{20}{xx}$ with $+\frac{1}{48}$. The left pupil is sluggish and there are several pigment specks in the anterior capsule of the lens near the pupillary border. It was feared that sympathetic iritis was threatened, and Dr. C. R. Agnew therefore enucleated the eye, the writer having administered ether.

III. IRIDO-CHOROIDITIS WITH CATARACT; IRIDECTOMY FAIL- ING TO QUIET THE EYE, ENUCLEATION RESORTED TO.

October 20, 1873. Mr. J. T. R., æt. 25 years, states that in March last a haziness and dimness came over his right eye. This gradually became worse until in June he could no longer

distinguish objects. He can still put up his hand and see that something is there but cannot see what it is. He has had no pain in the eye until lately, and now only occasionally. He has been under the treatment of a distinguished ophthalmologist who has given him mercury and iodide of potassium internally and a solution of sulphate of atropia in the eye. He remembers having neuralgia over the left eye a year and a half ago which lasted four or five days. He never had venereal disease, malaria, nor rheumatism. He has worn colored glasses for several months because his eyes are sensitive to light. L. V.=²⁰/_{xx}.

Right eye, lens opaque, pupil dilated irregularly and iris pressed forward nearly obliterating anterior chamber; tension increased; circum-corneal injection.

Dr. Agnew performed an iridectomy upon the right eye with the understanding that if that should fail to arrest the disease and quiet the eye it should be enucleated.

February 19, 1874. Mr. R. returned, saying that his eye had been growing more and more painful since the operation. The conditions were the same as before the operation except that the eyeball was harder, more red and more painful, and that the fellow eye was suffering more from sympathetic irritation. I administered ether and Dr. Agnew enucleated the eye.

IV. ENUCLEATION FOR STAPHYLOMA; POSTERIOR STAPHYLOMA CUT INTO CAUSING COLLAPSE OF EYEBALL DURING ENUCLEATION.

February 26, 1874. Mrs. Y. came to Dr. Agnew with so large a staphyloma of the cornea and ciliary region that she could no longer close the lids over the eye. Dr. Agnew advised enucleation to remove the deformity and to render the patient more comfortable. With her consent I gave her ether and Dr. Agnew enucleated the eye. In doing so, and while attempting to sever the optic nerve, the vitreous suddenly escaped and the globe collapsed. After getting the eye out

we found that there was a large and thin staphyloma posticum which the doctor had cut into. The collapse of an eyeball during enucleation is always embarrassing but the most skillful operator does not always succeed in avoiding that accident.

V. SIGHT LOST FROM STAB-WOUND; ENUCLEATION FOR SYMPATHETIC IRRITATION EIGHTEEN YEARS AFTERWARD;
BONY PLATE IN CHOROID.

March 12, 1874. Daniel C., æt. 25 years, engineer, gives a history of having had a knife run into his right eye about eighteen years ago. The cornea is leucomatous and the eyeball soft, atrophied, and sightless. The left eye has vision $\frac{20}{xx}$ but has recently been very sensitive to light at times.

March 18. Ether having been given by myself Dr. C. R. Agnew enucleated the eyeball. He opened it immediately, and found a bony plate occupying the place of the choroid, with an opening in it for the passage of the optic nerve.

April 29, 1874. There is still some discharge. Advised to leave out the artificial eye for a few days and bathe the eye with alum solution.

CLEANLINESS IN EYE SURGERY.

BY B. L. MILLIKIN, M.D.,

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Cleveland, O.

Read before the Ohio State Medical Society, June 4, 1890.

The great advances all along the line of modern surgery have been due to the methods which have been used to protect all open wounds from the entrance of septic material. I think we may safely say that cleanliness now is the object aimed at in every surgical procedure, and the development of the aseptic and antiseptic methods, now so universally used, has this as its basis. It matters little whether we use some of the many antiseptic solutions or simply pure boiled water, equally good results may be obtained. No doubt the great care given to the minutest details in all surgical operations, the attention to the care of the instruments, of the person and the hands of the operator and his assistants, to the dressings, and the surroundings of the patient, all contribute to the wonderfully good results obtained in the surgical work of to-day.

As in general surgery so in the special surgery of eye work, cleanliness must be insisted upon if we expect to save ourselves from the mortification and blame which now attaches to suppurative troubles following operative procedures. The tendency of all reports on operative cases during late years has been in the direction of less and less trouble from suppuration after operations upon the eye and its appendages, and even less inflammation than formerly. Gentlemen now frequently claim to have long series of cataract operations with and without iridectomy, in which even an iritis does not occur, and

without any tendency whatever for the formation of attachments of the iris to the lens capsule.

Our subject may be divided into three heads, which I shall consider very briefly, viz.:

1. The care of the instruments for operation.
2. The care of the organ before and during the operation.
3. The after-treatment.

1. The care of instruments.—This is an exceedingly important matter, for, undoubtedly in many cases where severe inflammation and suppurative troubles have followed operations, the septic material has been introduced into the wounds by instruments improperly cleaned, and especially is this the case when the instruments have been introduced into the interior of the eyeball, as in cataracts, iridectomies, etc. Various plans have been followed for keeping the instruments clean, such as dipping them in boiling water just before use, washing them in alcohol, placing in carbolic acid solution, etc. Some gentlemen, after use of the instruments, place them in a dish of boiling water and cook them for several minutes—all the metallic portion of the instruments, and this is, undoubtedly, a good and safe plan. Briefly, a good method to pursue, I think, is this: Before using instruments, if they have been properly cleaned after a former operation, they should be thoroughly cleansed with alcohol, and for this purpose I know of nothing better than absorbent cotton saturated with the alcohol, with which the delicate instruments may be swabbed off very readily and thoroughly, the cotton being so soft as not to be unwieldy. If one likes they may then be placed in a solution of carbolic acid, but I do not think this has any special advantage, and the numbing effect of the carbolic solution on the fingers, in my own case at least, is disagreeable, and interferes with the delicate touch sometimes so essential for nice operating. After the operation the instruments should be thoroughly washed in hot or boiling water, and thoroughly dried and placed in their proper receptacles. It may be needless to remark, but is a very important point, that for all cutting operations the instruments should have the keenest edge

possible. Many gentlemen who do much operating on cataracts never use a knife twice without sharpening.

2. How shall we prepare the organ for operation and what shall we do during the operation? Different gentlemen and different schools pursue somewhat different plans, and if we go from clinic to clinic in different European cities, we shall observe different degrees of care and attention to details. As a rule, the continental operators pursue a little more extensive plan of antisepsis than their English brethren, but I do not know that their results are any more satisfactory than their equally brilliant confrères on the other side of the channel. In Paris, probably no one is more broadly scientific, careful, skillful, practical and attentive to details than Landolt. His plan is the thorough washing of the eyeball and its surroundings with a 1:5000 bichloride of mercury solution before an operation, the borders of the lids, the eyebrows, etc., being well scrubbed with a bit of cotton dipped in this solution. Then during the operation frequent instillations of the same fluid are employed, the utmost attention being given to details, his splendid results attesting his great care.

In Berlin Hirschberg, who almost makes his operating room his hobby, carries the question of antisepsis, or as he prefers to call it, asepsis, to the extremest degree. His room for operating is almost immaculate, and everything which is cookable is boiled and steamed and sizzled until a respectable microbe would be ashamed to show his head. His dressings, his bandages, his solutions, his instruments, his instrument cases, all are subjected to high degrees of heat, in apparatus cases constructed on purpose, causing destruction of all germs. Every gentleman who enters his room must wash his hands in soap and water and bichloride of mercury solution, and don a white robe before he can witness an operation. The greatest attention is given to rendering the eye and its appendages aseptic. And so he claims as a result the entire absence of all suppurative trouble, and even the very rare presence of any iritic inflammations and adhesions after cataract operations—certainly a most brilliant outcome of his painstaking care.

While we cannot help feeling that his system is somewhat impracticable under the circumstances in which many gentlemen are perforce compelled to do operating, yet we cannot help applauding Prof. Hirschberg for his enthusiastic attention to the interesting details of an elaborate and successful system of aseptic operating. The plan which I have pursued, and with uniformly gratifying results, has been, before an operation, to thoroughly wash with soap and warm water the entire surroundings of the eye, the lids, the brows, and the cheeks. Then the whole is freely bathed in a solution of 1:5000 bichloride of mercury. Also the eyeball itself is thoroughly washed with this solution, the lids everted and washed, the roots of the lashes and edges of lids scrubbed with the same, and everything made as clean as possible. Usually I use a 4% solution of cocaine made up with the bichloride preparation, two or three applications of which render the eye comparatively insensible to the pain of most operations. By having the cocaine so made I have no hesitation in using it, if necessary, during the progress of the operation. As the operation goes on, occasionally, as may be necessary either to cleanse the eye or to keep it moist, I have a little of the same solution dropped in the eye, or with a pledget of cotton dipped in it gently wipe off the discharges, blood, etc. When the operation is complete I carefully wash away all the discharge by flooding the eyeball and wiping off the lids, when we are ready for the permanent dressing. The only objection I have to the use of the solution of bichloride of mercury is that in many cases it produces a good deal of smarting and irritation of the eyes which often is quite severe, and continues for a considerable time after its application, so much so, indeed, that occasionally I have resorted to a solution of boracic acid in its stead. The injection of the conjunctiva is often also quite considerable. In the great majority of cases, however, its use is well borne.

This brings us to the third point, upon which I shall speak briefly—the after treatment of operations upon the eye.

Probably there is no subject in eye work upon which men

differ in their views and practice more than in this, and no plan can be outlined which would meet with the universal approval of all operators in all its details. But I think all are agreed in the few essentials of all after treatment, viz.: cleanliness, rest and protection of the organ. How we shall best obtain these has been a matter of much thought among specialists. I have no doubt that if we could obtain always perfectly sterilized water, its use alone would be quite effectual as a means of cleansing the eye as we would need, and this has been used very successfully and satisfactorily in general surgery. In eye work, however, we must remember that the enemy often lurks in the secretions of the eyelids, and may not be entirely dislodged even by the most painstaking care. For this reason we may resort to the use of antiseptic solutions, such as boric acid, bichloride of mercury, etc., with a little more feeling of ease on account of their reputed properties of destroying disease germs. Most operations, I think, do better by the organ being put at rest and protected against outside influences, and the major operations do better by rest of the entire body.

I am quite sure, however, that this latter element was carried to extremes in the eye surgery of a few years ago, as many gentlemen were in the habit of keeping all cases in bed for a long time after the more serious operations. This does no good, and in most cases is a positive harm. Old people, particularly, bear lying in bed long very badly, and I think now few gentlemen, even after cataract operations, keep patients in bed more than from two to four or five days. And the reason for cases among elderly people doing better by maintaining the natural and normal rule of life is not far to seek. Cataract, which is the most common disease for which we operate on elderly people, comes on without any general disturbance of the system, and putting such persons in bed breaks up their ordinary habits and so interferes with the normal functions of the body. So I believe keeping cataract cases in bed longer than is sufficient for the edges of the wound to adhere well together does no good, and may be a positive

harm, and the same remark applies to iridectomies. For operations which do not involve the opening of the eyeball itself, keeping in bed for more than twenty-four hours is entirely unnecessary. The almost universal rule of the profession with reference to the after treatment of operations is by protecting the eye with a compress and bandage of some kind, and I do not know that it matters with what means we do this, as I have been able to observe within the past years most of the medical gentlemen in the European clinics employ compresses and bandages, and many of their compresses wet with a solution of the bichloride, and either wet or dry bandages. A rule which I think is an important one, is, not to disturb the eye after an operation oftener than is necessary. So after a cataract operation, for instance, I would not remove the dressings for two, three, four, five, or even six days, if there were no indications giving evidence of some unfavorable disturbance, and one will often be gratified by seeing how little disturbance there has been in an eye operated on and so constantly protected for several days. Often the conjunctiva is hardly injected. I know some gentlemen claim that it is desirable to see what and how the eye is doing within twenty-four hours after an operation, but I am convinced it is meddlesome curiosity to open an eye before one gets some indications for doing so. As well might the laparotomist remove the dressings from the abdomen to see how much the wound had healed within twenty-four hours, which no one now dreams of doing without specific cause. If there is much pain, or discomfort, or other evidence showing too much inflammatory disturbance, then this is another matter, and the eye should be looked after. We often see compresses which have been left on the eye for two to four or five days removed, showing almost no discharge, and which have not been uncomfortable to the patient, in fact showing no more soiling than the compress removed at the same time from the unoperated eye.

Another rule about dressings of the eye, which I think is important, and which is frequently violated, is not to keep the eye covered too long. As soon as the wound has well healed,

if there is no hæmorrhage or inflammatory material to be absorbed, the dressings should be removed. I have often seen the irritation prolonged by keeping on dressings, which, upon their removal and leaving the eye free, has very rapidly subsided. Of course there may be specific purposes for which it is desirable to keep up pressure and protection with bandages, and for which no hard and fast rules can be laid down, but I am sure a moderately early removal of all dressings from the eyes redounds to the comfort and cure of the patient. As in general medicine or surgery, so in eye surgery, every man must use his best judgment in the special case before him as to what is the best treatment for the case under the circumstances present, and only general principles can be outlined for his guidance. But I believe that he who gives most attention and care to the details of his work, who finds even the minutest things with reference to perfect cleanliness in his eye surgery not beneath his constant watchfulness, who bends his every effort to eradicating every cause of sepsis, will be the most successful in his results, even though he may lack some of the brilliancy of manipulation and the delicacy of touch of some of his more mechanical brothers.

TRANSLATION.

PATHOLOGY AND NEW TREATMENT OF SYMPATHETIC OPHTHALMIA.

BY CHAS. ABADIE, OF PARIS.

Translated by J. WALTER PARK, M.D., of Harrisburg, Pa.

Genuine sympathetic ophthalmia, resulting from a traumatic lesion, and which causes so many irreparable disasters to the eye, is a formidable microbial disease, of infectious origin.

This new idea of its pathology, according to the investigations of Leber and Deutschmann, has, beyond a doubt, singularly thrown light upon the clinical view of this serious affection, which up to that time had still remained obscure. Since that, observation, guided by this new conception of its etiology, confirms facts which before seemed incomprehensible and not easy of explanation; and the changes of treatment are surer and more efficacious.

It seems more reasonable to admit the transmitting of the infection by continuity of tissue through the optic nerve and chiasm to the opposite eye, than through the ciliary nerves and nervous centres. Besides, we do not yet know the anatomical connection between the nuclei of the trijemini, and it would seem astonishing that so serious a procedure, bordering upon the destruction of the other eye, could arise in the cephalic nervous centers without, as a consequence, determining other disorders and functional troubles. This, then, is a general view of its transmission from one eye to the other; the therapeutic agents applied to the injured eye may not be antiseptic; the wound may not be dressed strictly antiseptic, to prevent infection, or the edges of the wound may not lie down closely or evenly, and thus become invaded by microbes. They

soon generate and multiply, penetrating into the deeper parts of the eye, and through the chiasm into the optic nerve of the opposite side. If the disease is not promptly checked, the second eye is completely destroyed and blindness is the result. Thus we have an easy explanation of the chain of pathological phenomena during the evolution of microbes and their disorganizing action upon the healthy tissues. These same ideas seem to explain the remaining obscure points in the progress and treatment of this singular and formidable disease.

What is it then that we wish to prevent? It is enucleation. This procedure was arrived at by empiricism, or rather by observation, but without any explanation to show why or how the removing of the diseased eye cured the good eye. At present we seem to have a very good explanation. It is evident that if enucleation of the infected or injured eye is performed before the infection has gained access to the optic nerve, and thus the means of communication cut off by section of the nerve, the propagation is cut short and the other eye saved.

Clinical experience has always been unanimous upon the efficacy of enucleation when done in time, before any sympathetic action is shown in the opposite eye. The question sometimes becomes very difficult, and very embarrassing to decide, as to just when sympathetic action has begun in the other eye. Here opinions begin to differ. Some recommend enucleation, while others absolutely condemn it. We see the embarrassing position into which surgeons are placed. It is this question which we wish to solve.

The injured eye is the nidus for the generation of microbes. Microbes that have contaminated a wound in any way or manner multiply very fast and in immense numbers, on account of the vitality of the contused or lacerated tissues being less than theirs; It is here that they begin their work of destruction, and after becoming numerous and their vitality strong, then, and then only, do they begin their attack upon the surrounding healthy tissues, by penetrating into the deeper parts, radiating from a common centre, it being the wound or lacerated part

itself. If, in consequence, a sympathetic ophthalmia develops in the opposite eye, and the first or injured eye is enucleated, you thus remove the generating particles and prevent the microbic development.

Thus far, well done; but we have still not done our whole duty, for we are leaving a second eye to the mercies of microbian infection, which has already taken place, and which is very important to treat in order to save the remaining eye. How, then, do we propose to do this? Several ways present themselves, which we will now consider.

If the infection of the sound eye has not taken place from the beginning of the disease, the microbes as yet are few in number, and will have a severe struggle in their work of destruction in healthy tissues. Phagocytes only seem to have a tendency of destroying normal cellular tissue (this is still bacteriologically not a settled fact), and their numbers not being increased by others coming from the diseased eye, we can save the good eye. Saving the good eye will evidently, yet singularly, be assisted, besides enucleation of the bad eye, by the use of mercurial germicides (general ointment inunctions). But, on the contrary, if enucleation of the bad eye has been performed too late, after being invaded by microbes for a long time, and the deep tissues have become affected, and can no longer maintain a vigorous struggle against the large numbers of microbes which are still penetrating further into the surrounding parts, and we do not employ mercurials and germicidal treatment besides, the good eye will be destroyed and enucleation of the bad one will not save the good one. We also know this fact, by observation, that when an eye is affected by sympathetic ophthalmia, and that we are able to put a stop to its further progress, whether by enucleation or some other means, it is necessary to do it at once, before the morbid process has entirely destroyed it. The effect upon an injured eye invaded by microbes which have not lost their virulence, and the resistance of the tissues becomes weakened, is such as to cause them to go on in their destructive work with renewed activity. The results furnished by the researches and legiti-

mate bacteriological experiments are important conclusions for clinical use.

It is quite certain that enucleation done at an early date, before the infection had gained access to the optic nerve, prevents sympathetic ophthalmia in the other eye. If done later on, it may still be of use, especially when accompanied by a complete general mercurial treatment. In certain cases, it is true, it is of not much benefit, but as some authors say, it does no harm, nor aggravate the disease, but sometimes suppresses the generative process. Such, in short, was the therapeutic question of sympathetic ophthalmia before the bacteriological period; somewhat empirical and obscure. At present we have a better knowledge of the true nature of the disease with which we have to combat; we should, and we can, give much better and more effective treatment.

Where an eye is seriously injured, and it may upon first examination seem entirely lost, and the question of enucleation is proposed, we are now told that the enucleation may be avoided, and the manner of procedure is indicated. At first, we try by a strict antiseptic treatment to avoid all infection, but if, in spite of all, infection occurs, we cauterize the wound with the cautery point, wherever it may be, being careful to apply it to every part of the wound, and to have the patient thoroughly chloroformed. This does not even then always prevent sympathetic ophthalmia. Notwithstanding all this, if it should develop, try to prevent its further progress by injecting into the eye (which now seems destined to enucleation), one or two drops, at most, of a 1 to 1,000 bichloride solution. These injections cause considerable irritation for some hours, but little by little the reaction subsides, until the eye becomes normal, and both eyes then improve. The most remarkable case under observation, and which has been my first in my departure of this new treatment, is worth stating:

A lady, æt. 60 years, employed in a kiosk, accidentally run against a stair-case, injuring her left eye very severely. Seen some hours after the accident, I found upon examination an enormous rupture of the sclerotic, almost an equal distance

from the cornea and the equator of the eye. The rupture was two centimeters wide, the crystalline lens expelled, and a hernial protrusion of the ciliary body in the wound. It was washed carefully with a solution of bichloride 1 to 2,000, and antiseptic dressing applied to the eye. The patient was very poor and could not afford to stop work, but came regularly to have her eye dressed. All seemed to progress favorably until three weeks after the accident, when a severe sympathetic ophthalmia set in. The changes were so rapid that a few days after their appearance it was difficult for her to see sufficient to go around. Before proceeding to enucleate the left eye, in which cicatrization had already mostly taken place, I used the theoretical idea of pressure, and then determined to make another attempt to save the eye before removing it. I cauterized the almost insignificant remaining part of the prolapsed ciliary body, and with a 'Pravaz' syringe injected into the injured eye two drops of a 1 to 500 solution of bichloride. The reaction was severe and the pain violent. The following day there was a bright red peri-corneal injection; the posterior surface of the cornea and Decemet's membrane were absolutely opaque; but, little by little, the following day the reaction subsided, the cornea cleared up entirely, and the vision of the sympathizing eye also improved rapidly. In short, in fifteen days the vision of the sympathizing eye became almost normal, and the injured eye, which was destined to be enucleated, improved so much that the patient counted fingers several metres distant, and will be able to see sufficiently to go around almost anywhere. Four months after the accident the recovery was so complete that when the injured eye was provided with a +15 D. glass, the patient could see to read.

Another interesting case which came under my observation was a child, æt. 14 years, who had a slight injury of one eye which caused sympathetic ophthalmia in the other to such an extent as to leave her with very dim vision in both. In this difficult conjuncture, I decided to inject two drops of a 1 to 1,000 bichloride solution. The reaction was much less marked this time, subsided in a few days, and the acuteness of vision improved very much.

My last case is, perhaps, more interesting than any of the others. I have had the occasion to enucleate the right eye of this patient (before making any of my new therapeutic experiments) for sympathetic ophthalmia. Notwithstanding the enucleation, and in spite of extensive mercurial inunctions, the sympathetic ophthalmia continued progressively in the left eye, and vision became almost extinct. I likewise injected into this eye (the only remaining one), a drop of 1 to 1,000 solution of bichloride, and its further progress was stopped at once.

In support of these facts I think I am justified in saying that they mark a new era in the therapeutics of sympathetic ophthalmia of to-day. Enucleation, which heretofore was the first thing to be done, should only be resorted to, at once, in those exceptional cases where there is absolutely no hope of saving it.

In cases of severe injuries, if, in spite of all strict antiseptic treatment, severe sympathetic ophthalmia develops, before proceeding to enucleate the eye, first apply the galvano-cautery point to all parts of the wound; secondly, make intra-ocular injections of one or two drops of a bichloride solution 1 to 1,000. In this way we often put a stop to its further progress, and save the eye which otherwise would have been doomed to destruction. At last, if, in spite of all treatment, it being too late, or the enucleation ineffectual, there is only one eye remaining, and that one apparently destroyed through sympathy of the other, we should try to reduce the severity of the morbid process, which is better attained by injecting into the eye one or two drops of a 1 to 1,000 bichloride solution, and then as a trial-operation perform iridectomy or extraction of the lens.

SELECTIONS FROM AMERICAN MEDICAL JOURNALS.

ADDRESS OF THE CHAIRMAN OF THE SECTION OF OPHTHALMOLOGY.

BY S. C. AYRES, M.D., OF CINCINNATI, OHIO.

Delivered at the Forty-First Annual Meeting of the American Medical Association, held at Nashville, Tenn., May, 1890.

The Section of Ophthalmology, through its Chairman, welcomes most cordially each and every one of you to-day. Although this is only its second year of independent existence, it does not feel like a child of tender years, but rather like a man of vigor and strength. It points with pride to the programme of last year, and this as substantial evidence of its ability to hold its own with the other and older Sections. The contributions of last year were excellent and of a high order, and your Chairman can emphasize the same in relation to the programme which he has to offer.

There is no question but that there is material enough among those who devote themselves to our specialty to sustain the Section of Ophthalmology with honor and credit. It needs only the co-operation of those interested to make it so attractive that it will yearly call forth the personal observations of its members in a manner that will make its meetings highly interesting and mutually beneficial.

We have met to interchange views on topics of mutual interest, to profit by each other's experience and observations, to enjoy that social intercourse which fosters personal friend-

ship among professional men, and to accept the generous hospitality of our Southern confreres in this the beautiful capital of their State.

It has been charged that the life of a specialist makes him somewhat narrow-minded, as his work in a measure excludes the consideration of other branches. I question the truth of this. It certainly does not prevent him from taking an interest in and enjoying a retrospect of the progress which has been made in the vast field of work now occupied by medicine, surgery and the allied branches. The time was when a physician was expected to know a good deal about everything—in fact he was even expected to know everything; but that day is past.

Owing to new and advanced methods of teaching, our conception of the study of medicine is wholly different now from what it was twenty years ago. The horizon of our knowledge has so widened that we are not content to assume that we can comprehend it all. There is a limit to our ability to study, for time and physical endurance are limited, and we must content ourselves with studying well our own part and comprehending as much as possible of other allied branches. As we look out on a landscape we see clearly and distinctly what is near, but less distinctly what is in the distance. So with our specialty; it is close to our eyes and our heart and we take it all in, but we can still enjoy what surrounds us, although at a greater distance.

We know how much work it takes to keep ourselves up with the advances of the day, and we know full well that other branches are as broad, and as long, and as deep as our own, and we can appreciate the work which our colleagues have to do. From this standpoint—and I hold it is a true one—a specialist should not be narrow-minded; his own work should broaden his views of the fields of work his colleagues are engaged in. The allied branches have made wonderful progress in the past few years, and we can certainly look at their work with pride and admiration.

We look with wonder on men who now with such confidence

open the abdominal cavity and perform operations which not many years ago would have been deemed not only foolhardy, but unjustifiable. In preantiseptic days such operations would have been followed by the most disastrous results; but now—how changed! Statistics prove that these operations are not only justifiable, but positively demanded as diagnostic measures.

We learn of an eminent writer in the East something of the progress of surgery which is simply astounding. In compound fractions of all grades the mortality is only one-half of one per cent, instead of from 25 per cent to 68 per cent, as it was in years gone by. In ovariectomy Mr. Tait's percentage of loss in his second series of 1,000 cases was only 3.3 per cent, when a loss of 50 per cent was common twenty-five years ago.

Surgeons now remove a portion of the stomach in case of cancer of that organ; sections of the intestines are also removed successfully; kidneys are cut down, calculi removed, and the gland preserved to perform its function; if it cannot do so, it is removed entire; and so with the gall bladder—it is opened, calculi removed, and in case this cannot be done successfully the gall bladder itself is sacrificed. Even the citadel of the mind itself—the brain—is opened and tumors successfully removed, which had been located by long and patient study of its functions. This chapter of progress is so startling that we stand in awe and admiration, and wonder what will next be done.

Are we holding up our end of the line in this march of progress? How can each one add something to advance the good of the whole? Cases of interest fall to the lot of each and every one. Interesting and valuable observations are being made, but do we give our associates the benefit of them? How can we best do it? My answer is, by giving to the journals a prompt report of such cases. It is not necessary that an elaborate paper should be written, nor that the whole literature of the subject should be analyzed; leave that for some one else who has more time than you. With the systematic reports of the progress of ophthalmology which are given at

intervals in this country and Europe, and particularly in Nagel's Jahresbericht, your grain of seed will not be lost, but will be preserved in a permanent form utilized for the best purposes of the profession.

Take the Transactions of the American Ophthalmological Society as the representative body in this country and see how many short papers there are, and how few long ones. A single case is frequently presented, but it is the nucleus of a discussion which brings out the various opinions of those present. Let us, then, bear this in mind and give the profession the benefit of our observations.

To aid us in this, a systematic arrangement of our cases as they come on, with free notes of the various phases through which they pass, will assist us immensely.

Dr. James Anderson, in a very interesting and valuable article published in the *Ophthalmic Review* on "Some Ocular and Nervous Affections in Diabetes and Allied Conditions," says: "I think it the best and most hopeful feature in ophthalmology that it has relations, closer and more remote, with every branch of surgery and medicine."

The intimate relationship between ophthalmology and general medicine and neurology is recognized by all. The more cerebral and spinal diseases are studied, the more is this appreciated. At the present time every neurologist must be familiar with the alterations in the optic nerve, the influence of the paresis or paralysis of the ocular muscles, and the influences of errors of refraction on headaches and various subjective symptoms which are erroneously attributed to other organs.

Dr. J. Hughlings Jackson was last year elected President of the Ophthalmological Society of the United Kingdom. In his introductory address he says that he began his career in an ophthalmic hospital, and he thinks it the luckiest thing in his medical life. He there obtained lessons on exact observation which he could not have obtained in any other branch. He says that twenty-three years ago he wrote as follows: "Until physicians work at the muscular disorders of various

convulsive seizures as carefully as ophthalmic surgeons do at paralysis of the ocular muscles, our knowledge of convulsions will not advance in an orderly way." This seems almost prophetic. He has done much to clear up many obscure points in diagnosing of the pathology of cerebral and spinal diseases.

Look at the manner in which convulsive seizures of a muscle or a set of muscles on a limb or of the entire body have been studied. These phenomena have been investigated with reference to the special portion of the brain which was involved, and how grand has been the outcome. Portions of the brain presiding over certain functions are now quite clearly mapped out, and still the work goes on.

Last year we had excellent suggestions on the discussion of ophthalmic subjects, and valuable hints were given. To carry out this most desirable work, how great an aid would a classified register be, where our cases were so arranged that we could at once refer to any particular subject.

When we wish to investigate a point we naturally turn to the statistics which have been published. What a satisfaction it is to find clear and convincing light thrown on a point which was in dispute. We feel thankful toward those who have been so painstaking as to collate their cases and the results, and so tabulate them that we can make use of them. To whom are we indebted for these statistics? Public institutions, hospitals, infirmaries, etc., are expected to publish these cases; but do physicians, surgeons, oculists, etc., collect their cases and so tabulate them at any time? I fancy not. Last year at Newport we had a book for the registration of cases presented to us as a sample book of its kind, and it presented many excellent points. It was shown how easily one could refer to any class of diseases and at once record the number treated, results, complications, etc. How many oculists keep such a record, or have kept one for years past.

I think that if cases were classified as they come along one would derive much more pleasure in looking over his case book at the end of the year. He would also be better able to draw conclusions from his experience.

Many interesting cases fade from our memory as new ones crowd on with fresh points of interest. We have indistinct recollections of them, but cannot recall the name, nor the exact date; and so we move on, leaving much behind us that we ought to have preserved in a shape that we could refer to it at any time. A classified register would enable us to refer to our cases at a glance and collate and utilize them. We would in this way preserve the valuable ones and be able to sift the ordinary uninteresting ones from those we wished to preserve.

A review of the progress of ophthalmology will compare favorably with that of any other branch of medicine. The new, or rather old, operation of simple extraction is gaining in favor. Statistics are not yet extensive enough to prove its true value, but it seems to me that it is bound to supersede the modified linear extraction of Graefe, and show much superior results. Men educated in the Graefe school are loath to give up a favorite procedure, but such statistics as Knapp has furnished will prove an unanswerable argument to any objections.

The eye as associated with, or involving, renal, cerebral, and spinal diseases, and all reflex symptoms of internal organs, has been studied with renewed care. The intimate relationship between these diseases and the eye is so generally acknowledged that this point no longer needs an argument. We are fortunately able to act as guides to show our confreres through places which otherwise would be dark without the aid of the skilled ophthalmologist.

The study of the errors of refraction is receiving, I may say, universal attention. Its importance grows as it is better appreciated by the profession as well as by parents and teachers. The relief afforded by the careful and accurate adjustment of lenses is incalculable, and as accurate methods are adopted, the results of refraction work are bound to be more and more satisfactory.

This is becoming the most important as well as the most interesting branch of our specialty. In connection with this the question of strabismus comes up, and it is, indeed, most satis-

factory to know that it is now receiving intelligent and rational treatment. The results of correcting the underlying error of refraction are most satisfactory, and the necessity for making advancement operations to correct divergence after tenotomy of the internus will seldom ever occur.

Antiseptic precautions, before and after operations on the eye, are now universally adopted, and the results are very gratifying. They will grow in importance as ophthalmic surgery advances. The ophthalmic journals, foreign and domestic, and the proceedings of the ophthalmological societies abound in rich results of the researches of the most eminent men in our specialty. The pens of such men abroad as Alfred Graefe, Hugo Magnus, Van Hippel, Deutschman, Landolt, DeWecker, Leber, Schweiger, Hirschberg, Hutchinson, Nettleship, and a host of others abroad, as well as Knapp, Gruening, Noyes, Kipp, Williams, Bull, Wadsworth, Theobald, Stevens, Roosa, Risley, Harlan, Alt, Chisolm, and many others in our own country, are active in giving to the profession the results of their labors. We have thus each year a mass of rich experience presented which is of inestimable value.

Death has claimed two eminent men during the past year, Jacobson and Donders. The latter by his genius and profound study worked up the subject of errors of refraction from a theoretical and mathematical standpoint to a practical standpoint, and has left a monument to his name which will be more enduring than a shaft of marble or granite.

This year has been productive of two new and valuable text-books, one by Dr. Geo. A. Berry, of Edenburg, and the other by Dr. Henry D. Noyes, of New York. Since the book written by Wells, of London, several years ago, we have not had any general text-book written in the English language, but have depended principally upon the translations of the works of our German and French confrères. While these are very good, yet, we welcome with pleasure these two books written in the English language. They are certainly in advance in all respects of any works hitherto published, and are monuments of earnest, faithful work, which reflect great credit on their respective authors.

In order to give a practical turn to my paper, I will say a few words in relation to the topical use of bichloride of mercury in the treatment of ocular diseases. For the past year I have used it a great deal. It is not a new remedy, but a very old one. If you will consult the oldest book you have on diseases of the eye, you will see that its use is recommended there. It gave place to other and newer remedies, but now in the light of antiseptic investigation we go back to our old friend, and find it one of the most reliable agents we can command. It is a powerful remedy, and must be used with care and discrimination. And right here comes the point of greatest importance: It has generally been used in two strong solutions, and the end to be accomplished has been defeated by this fact. In weaker solutions it acts kindly, surely, and with very slight tendency to excite relapse.

In granular lids I have used it in a good many severe cases, and I have tested it by carefully excluding other well-known remedies, and have been much pleased with its effects. In severe cases I used it 1-500, brushing it on the lids, and then washing it off. I found this too strong for regular treatment, the eyes not tolerating it well; I fell into the habit of using it 1-2,000, and found that this did better and only exceptionally caused any unfavorable effect. Occasionally I would use the stronger solution mentioned, but relied on the weaker one. It is not painful, and patients recover from it more quickly than from the use of the crystal of copper, or from the ordinary solutions of silver nitrate.

In severe acute catarrhal conjunctivitis its effects were excellent. It was generally ordered in solutions of 1-3,000 or 1-4,000, and used three times a day, and cloths moistened with it were placed over the closed eye-lids. In phlyctenular conjunctivitis and keratitis it seemed to meet every demand required and gave excellent results. Under its influence the phlycten would disappear rapidly, and it seemed to me it prevented the development of new ones.

I have injected it frequently in blenorrhœa of the tear sac with the most satisfactory results. In purulent ophthalmia it

is questionable whether it is more valuable than our old standby, silver nitrate. There is an objection to it which we must bear in mind, especially where we order it in large quantities, that it is poisonous, and if taken internally might produce dangerous and even fatal symptoms. But the same thing can be said of atropine. The patient should be warned of the danger, and the bottle properly marked. It is a remedy which is bound to meet with increased favor, as it is more extensively used in solutions which are suited to the conditions of the eye. The use of the sublimate solution is right in the line of antiseptic treatment, and is worthy of a thorough and unbiased investigation. I hope that its use will receive that intelligent and discriminating consideration which it deserves.

Allow me, gentlemen, in conclusion, to express my unqualified confidence in the future success of our section, and to thank you for your generous contributions, and to express my high appreciation of the honor you have conferred on me as its chairman.—*Jour. Am. Med. Assn.*

GLAUCOMA FULMINANS, AFTER EXTRACTION OF CATARACT WITH IRIDECTOMY.

BY PETER D. KEYSER, M.D.,

Professor of Ophthalmology, Medico-Chirurgical College, Philadelphia.

Read in the Section of Ophthalmology, at the Fortieth Annual Meeting of the American Medical Association, June, 1889.

It is a well known fact that iridectomy is the sovereign remedy for glaucoma, and a few cases have been reported (I have had such cases myself), in which there has been a return of the symptoms necessitating a second iridectomy. But never have I seen or heard of cases like those I purpose detailing in this report.

On July 21, 1888, I operated on the left eye of Mrs. E. G., an English lady æt. 66, for the extraction of senile cataract. She was in good health, but of gouty diathesis—some gouty spasmodic cough at times. The lens was completely clouded. Position and projection perfect. She had never had any severe or acute attacks of gout, although at times she said she was rheumatic. The urine had shown some albumen the year previous, but under the efficient care of her physician, Dr. A. K. Minich, this had passed entirely away.

The operation was made with all antiseptic precautions. The instruments were washed in absolute alcohol; the eyelids and skin around washed with water and soap, then a solution of silico-fluoride of sodium, gr. $\frac{1}{4}$, $\frac{3}{4}$ s. The latter solution was then instilled freely in the conjunctival sac, after which a 2 % solution of cocaine was dropped in. Everything being ready, the incision of the cornea, upper section, was made, and a large iridectomy. There was no hæmorrhage of any

kind from the iris or from the anterior part of the globe which extended into the anterior chamber. After opening the capsule the speculum was removed, and the lens delivered on gentle pressure over the lower lid. No vitreous was lost, and no cortical mass left in the eye. The whole operation passed off beautifully without pain or distress. She counted my fingers very promptly and saw the persons around.

The eye was again well washed with the silico-fluoride of sodium solution, a drop of atropia sulph., gr. ij $\bar{3}$ j, instilled therein, to draw the iris away from the incision and prevent any anterior adhesion, and the bandage put on.

On the 22d, after a good night's rest, and twenty-four hours after the operation, the bandage was removed, the external parts of the eye washed with warm water and the eye itself with a solution of boric acid, gr. x $\bar{3}$ j. By a candle light the eye was examined and found in good condition. No swelling or pain. The flannel bandage was removed and a Liebreich bandage put on, which was lighter and more comfortable.

On the 23d the eye was again washed the same as the day previous and found remarkably well; vision was excellent. Permitted to sit up in her rocking-chair all day now. On the 24th still doing well. On the 25th called to see her as usual and found her in splendid mood and condition, as there had been no pain or discomfort since the operation, and she was looking forward to the pleasure of again seeing. About an hour or two after I left her she was taken suddenly with an attack of very acute pain in the eye, extending up through the left half of the head. She had had no rest during the night, but thinking it would pass away, did not send for me, knowing that I would call the next day. When I called she was still suffering, and on removing the bandage I found the following condition of the eye: Pupil dilated, iris pushed forward towards the cornea, anterior chamber containing a large quantity of blood. Tension of the ball very great, + 3 to full extent. Vision reduced to the merest perception of light. All the appearances and symptoms of glaucoma fulminans. A solution of salicylate of eserine, gr. ij $\bar{3}$ j, was instilled into the

eye, and repeated three times that day. It gave relief and the next day the hyperæmia began to break up.

This treatment was continued for two or three days in the hope that the blood would be absorbed so that I could make another iridectomy. But as the blood was taken up it was perceived that the iris was pushed directly against the cornea, leaving not the least anterior chamber. I was then obliged to wait, hoping eventually to be able to get room enough to pass a small v. Graefe knife through the cornea without catching the iris, and then remove a large piece of the latter. During these days she would suffer at times with attacks of pain in the head. The tension of the ball kept up. After the absorption of the blood the vision began to improve for a few days, but then dimmed again.

It was not until fourteen days after the first attack, and under the constant instillation of the eserine solution, that I was able to make a good free iridectomy. This was done directly downwards, and at the same time lacerate the posterior capsule. The eye healed after this last operation very nicely, but developed very little vision; only light, especially when from the temporal side, and at times fingers could be seen. Sight seemed to improve for a while, then became less and less until it was almost nothing. I regretted that I could not make the iridectomy sooner, but it was utterly impossible to do so. I feel sure that if such an operation could have been done a few days after the attack, the sight would have been saved, as in the cases mentioned below.

It has been one of the phases of my professional life that, when I have a very interesting and uncommon case, within a year a similar one is sure to come under my observation, so on October 26 of the same year I removed a cataract from the left eye of Mr. James M., an English gentleman æt. 71. Position and projection was perfect. Right eye incipient cataract, but patient able to get around without assistance. Rheumatic, gouty diathesis, although then in excellent health. Urine free from albumen or sugar. The operation was made just as the previous one and under the same antiseptic precautions.

The capsule was found very tough. The lens came out on pressure, and the vitreous presented itself immediately after, but none came out of the incision.

October 27. All well. Eye washed with boric acid solution. No swelling or pain.

October 29. Eye did well until 1 A. M., when very severe pain set in, extending up into the head. The bandage was removed and applications of warm water made over the eye. When I saw him the pain was not so severe, but pupil was dilated, anterior chamber reduced, with a considerable hæmorrhage therein, and tension + 3. Otherwise eye looked well.

The case of Mrs. G. coming immediately to my mind, I determined to make an iridectomy as soon as possible, and as the blood in the anterior chamber was so much less than in her case, I felt I could do it in a day or two after the use of eserine. So on the second day after the instillation of a 2 gr. solution of eserine, finding the hyperæmia gone, I operated. The eye then gave very little trouble; tension reduced to normal and cure took place. After the eye was well the posterior capsule, which had become opaque, was drawn out with the hook.

On January 21, 1889, his vision was with + 9 D. \bigcirc + 3.5 D. cyl. 165' 6 $\frac{1}{12}$, and + 13 D. \bigcirc + 3.5 D. cyl. 165'. He read 1.05—.

Fortunately, in this case the anterior chamber was not so shallow as to prevent an iridectomy at an early day, the performing of which I am sure saved the eye from loss.

Another interesting case, although not reaching the fulminating form of those previously mentioned, but of well-marked symptoms of acute glaucoma, came before me in a hospital patient this year. Mrs. McG., æt. 58 years, well developed, rather stout and in good health. Right eye cataract—has been coming for the past three years. Position and projection perfect. Left eye, incipient cataract. Right eye extraction; upper iridectomy and lens removed on pressure without any mishap. Eye did remarkably well with excellent vision

until the ninth day, when a sharp pain suddenly set in in the eye and head; vision became dimmed. I saw her soon after the attack and found the pupil somewhat dilated and iris pushed forward toward the cornea, with ball very hard. Tension + 3. Fserine solution, gr. 4 $\frac{3}{4}$ i, was instilled at once, and a 2 gr. solution that evening and next day, when iridectomy was made. The pain was relieved on the instillation of the eserine and tension began to recede, but fearing a return on discontinuing the use of the eserine, the operation was performed.

Fourteen days after the last operation she was discharged with a good eye and vision + 10 D. = $\frac{6}{1}$ /_{XVIII.}

In these three cases atropia gr. 2 $\frac{3}{4}$ j, was instilled once only and then immediately after the operation. I have for a long while made it a rule to use the mydriatic at this time so as to remove the likelihood of the iris falling back into the incision in any way. In looking over the literature in relation to the development of glaucoma after the extraction of cataract with iridectomy, I am surprised to find so little in relation to it.

Bowman appears to be the first to call attention to it, for in the London Ophthalmic Hospital Reports, Vol. v, p. 1, he recites two cases in which there was great increase of tension after extraction of the lens and iridectomy. He says that it appeared to arise from an irritable condition of the nerves of secretion passing over into a paralytic state. Carter is the next to write of the glaucomatous condition which may arise after extraction with iridectomy, and recommends the incision of the posterior capsule.

These two are the only writers that I have seen so far who mentioned the occurrence of this condition, and in an experience of twenty-five years with large hospital service, these few cases are the only ones which have come to my notice. I have had many cases of iritis in different forms and at times subsequent to the operation of extraction, but never any developing of the marked glaucomatous symptoms and appearances as here related.

I regret exceedingly my inability to have been able to

make the second iridectomy at an early date in the first case described, for I really think that then the vision could have been saved; but when the chance came, it was too late, the eye having suffered already too severely from the glaucomatous process.

The question would naturally arise, What could have been the cause of the sudden attack of glaucoma in such an aggravated form in these cases? Priestly Smith, who has studied the pathology of glaucoma very thoroughly, after consideration of the ideas of all the other writers, claims that an insufficient circumlental space predisposes the eye to glaucoma, and this insufficiency may depend upon: 1, the increasing size of the lens which comes with advancing years (just here the query would come in, does not the eyeball reach its full growth and the lens its full size by 25 or 30 years of age?); 2 subnormal size of ball or of the ciliary zone, depending possibly on sensile contraction (I would remark also here that most cases I have seen have been with full round eyes, and how about cases in young persons and children, that occasionally occur?) 3, from the excessive size or prominence of the ciliary processes, which may be present at any time of life.

Among the exciting causes of primary glaucoma is congestion of the uveal tract which involves enlargement of the ciliary processes, which leads to compression of the infiltration angle. This may arise, as suggested by Bowman years ago, in a sudden paralytic action of the nerves of secretion causing an interference in the circulation, creating a morbid process in the ciliary processes throwing out an undue secretion into the vitreous, too rapid to pass from the vitreous into the aqueous chamber. Being thus impeded in the filtration process, a filling of the vitreous chamber takes place and a pressing forward occurs. This is seen by the advancement of the lens and iris toward the cornea accompanying the increase of tension. In the case above described there was no insufficiency of circumlental space, as the lenses had been removed, but the posterior capsules remained intact attached to the zone of Zain, making a curtain, as it were, in front of the vitreous,

which perhaps interfered with the free infiltration between the chambers. The escape of the fluid being retarded, the intra-ocular pressure naturally rises, the circulation in the ciliary processes becomes obstructed, swelling of the tissue takes place and an unusual condition of vascularity occurs; and in some cases hæmorrhage may emanate from an atheromatous condition.

It must be remembered that a single iridectomy in a glaucomatous eye does not always relieve it from the danger of a recurrence at some future day, and that another iridectomy would be necessary to save the eye.

I feel that more of such attacks of glaucoma after cataract extraction occur than we are aware of; that they have been overlooked, because not expected, and when developing have been classed as iritis.

In all cases of extraction of cataract, where there is a sudden interference in the regular and smooth course of healing, a careful examination of the tension should be made daily, and when any increase is found, instillation of eserine be made, and then, like Carter, I would recommend the rupture of the posterior capsule, preceded or accompanied, as the case may be, in many instances by an iridectomy.—*Jour. Amer. Med. Assn.*

SOCIETY PROCEEDINGS.

AMERICAN OPHTHALMOLOGICAL SOCIETY.

OFFICE OF THE SECRETARY, 43 PRATT ST., }
HARTFORD, CONN., September, 1889. }

At the twenty-fifth annual meeting of the Society, held at Pequot House, New London, July 17, and 18, 1889, the following candidates for membership were nominated and referred to the Committee on Membership:

Dr. W. McIlwaine, Trenton, N. J. Proposed by Drs. G. C. Harlan and C. J. Kipp.

Dr. B. J. Baldwin, Montgomery, Ala. Proposed by Drs. J. B. Emerson and D. Webster.

Dr. A. E. Ewing, St. Louis, Mo. Proposed by Drs. John Green and M. H. Post.

Dr. Neil J. Hepburn, New York. Proposed by Drs. O. D. Pomeroy and D. Webster.

Dr. Geo. Friebeis, Philadelphia. Proposed by Drs. Wm. Thomson and H. F. Hansell.

Dr. Chas. M. Culver, Albany, N. Y. Proposed by Drs. C. S. Bull and E. Jackson.

The names of the following candidates were referred to the Committee on Membership for the next year:

Dr. Harlan P. Allen, Columbus, Ohio. Proposed by Drs. T. R. Pooley and Robert Sattler.

Dr. Richmond Lennox, Brooklyn, N. Y. Proposed by Drs. W. S. Dennett and A. Mathewson.

Dr. Frank Nodine, Cleveland, Ohio. Proposed by Drs. W. F. Mittendorf and D. Webster.

Dr. Frank W. Ring, New York. Proposed by Drs. D. Webster and J. B. Emerson.

Dr. J. M. Ray, Louisville, Ky. Proposed by Drs. D. Webster and J. B. Emerson.

Dr. E. G. Clark, Columbus, Ohio. Proposed by Drs. G. C. Harlan and W. S. Little.

By a vote of the Society, in 1882, letters setting forth the claims of each candidate to membership should be furnished by both the proposer and the seconder.

At the meeting of the Society in 1887 the following standing rule was adopted:

The report of the Committee on Membership and the election of members shall be the business of the last session of the first day of the annual meeting.

The following resolution was adopted at the meeting in 1887:

Resolved: That a public announcement by a sign of a specialty with which a member is identified is hereby declared to be in violation of the third section of the constitution.

COMMITTEE ON MEMBERSHIP.

Dr. John Green, Chairman,

2670 Washington Ave., St. Louis, Mo.;

Dr. C. S. Bull;

Dr. Arthur Mathewson;

Dr. Samuel Theobald;

Dr. W. H. Carmalt.

S. B. ST. JOHN, Secretary.

HARTFORD, 43 PRATT ST., }
MAY 30, 1890. }

DEAR SIR:—The twenty-sixth annual meeting of the American Ophthalmological Society will be held this year on Wednesday and Thursday, the 16, and 17, of July, at the Hotel Kaaterskill, Catskill Mountains. Hotel Kaaterskill may be reached by the West Shore R. R., either via Ulster & Del. R.

R. (leaving West Shore R. R. at Kingston), or via Catskill Mountain R. R. to Palenville, and thence by stage. For latter route leave West Shore R. R. at Catskill. The rates for members and their families are \$3.00 per day.

With the view of securing an interesting discussion of papers presented at the meeting, the Secretary has been requested to ascertain the titles of all papers which may be offered; these titles will be incorporated in the formal call for the meeting, and will take precedence on the bulletin over all other papers.

In order that suitable accommodations may be secured for all members of the Society, will you please notify the Secretary before July 1st, whether or not it is your intention to be present at the meeting, and if you will be accompanied by any member of your family. Yours very truly,

S. B. ST. JOHN, Secretary.

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No. 7.

ON INTRAOCULAR SYRINGING IN CATARACT
EXTRACTION WITH A REPORT OF
FIFTY-THREE OPERATIONS.

BY J. A. LIPPINCOTT, M.D., PITTSBURGH, PA.

Read at the Meeting of the Pennsylvania State Medical Society in Pittsburgh,
June 11, 1890.

The history of medicine in all its departments thoroughly illustrates the war incessantly waged between the progressive and the conservative elements in human nature. In our nineteenth century, especially its latter half, *laissez-faire* appears to be at a discount. "Forgetting the things that are behind, we reach forward" with almost feverish avidity after a more refined diagnosis, more satisfactory therapeutics, and more efficient methods in surgery.

In the domain of ophthalmic surgery we observe the same unrest, the same stirring up of the dry bones, the same fearless discussion of principles once supposed to be forever settled by the authority of great names; *Nullius addictus jurare in verba magistri*. For example, it was long considered that in the method of operating for cataract proposed by the immortal von Graefe high water mark had been reached; but the

method has been since so greatly modified that the father of the Graefe operation would not recognize his own child. Even the iridectomy has been attacked, and its necessity questioned by some of the most eminent operators, and a general return to the simple operation, as it is called, confidently predicted. It is not the purpose of the writer of this paper to enter into the merits of the iridectomy question, which may for the present be regarded as *sub judice*. He will content himself with saying that, while the statistics presented by De Wecker, Knapp, and other advocates of the simple operation would be difficult to improve upon, he scarcely feels justified in abandoning a method which seems to him to be founded on reason and approved by experience.

The most important innovation introduced within recent years into the operation for the extraction of cataract is the injection of fluids into the anterior chamber after the expulsion of the lens. This procedure was instituted, or rather reintroduced¹ in 1884 by McKeown, of Belfast, but was almost simultaneously practised by Wicherkiewicz, and was soon taken up by Panas, DeWecker, Knapp, Grand-Clement, Khodine, Chodin, Lee, Bell and others. Up to the present time McKeown's following is not extensive, a fact which is not surprising when we consider the novelty and the apparently formidable nature of the method inaugurated by him.

I began to syringe out cortical remains October 17, 1888, from which date to June 4, 1890, I have made 57 extractions, using the syringe in all but four cases, being prevented from using it in these by rupture of the zonule either before or coincidentally with the escape of the nucleus, attended with loss or threatened loss of vitreous. Of the 57 operations 4 were made so recently that I cannot report the visual results beyond saying that they are all successful.

The remaining 53 cases, including, to complete the record 3 cases in which irrigation was not employed, are presented in tabulated form.

¹Magnus in v. Graefe's Archiv f. Ophth. xxxiv, 2 s. 167.

In all of the cases a preliminary iridectomy had been made. The size of the iridectomy varied from a generous coloboma when the pupil was rigid, to an approximately pure sphincterectomy when the pupil was freely dilatable.

Mode of operating.—The instruments, after careful cleansing, were allowed to remain in absolute alcohol during cocaineization of the eye, which consumed from fifteen to twenty minutes. During the same time an adequate supply of boric acid solution, $\frac{1}{2}$ of 1%, made with distilled water and then boiled and filtered, was warmed, and a portion placed in a large Graefe's undine by means of which the eye and its environment were long and thoroughly flushed, the patient being at the time encouraged to keep opening and shutting the lids and rolling the eyeball, so that the retrotarsal folds were pretty completely cleansed. During the cleansing process the instruments were transferred from the alcohol to a vessel containing some of the boric solution.

The lid speculum was now applied; and with a Graefe knife a large incision was made at the corneal margin (usually the lower) but entirely in corneal tissue. The laceration of the capsule was made in the shape of an inverted T with its horizontal portion near the lower margin of the lens. Immediately after the corneal incision, and again after the capsulotomy, the eyeball was freely irrigated with the boric solution. In case of hæmorrhage further steps were delayed until that was checked; and, in the few cases in which blood entered the anterior chamber, it was removed as thoroughly as possible by means of the syringe either before or after the capsulotomy. The speculum was now removed and the lids gently wiped dry. The upper lid was then drawn slightly upward with the thumb, the latter being so applied that its lateral edge near the tip rested securely on the edge of the lid. Pressure being now made (through the lid) the lens was, as a rule, easily expelled. Counter-pressure on the lower lip of the wound was, however, sometimes made either directly with the tortoise-shell spoon, or with the index finger of the other hand through the medium of the inferior tarsal cartilage.

After giving the patient a moment's rest, the syringe nozzle was then introduced, and a larger or smaller quantity of the boric solution was allowed to run in and out again, the nozzle being meanwhile moved gently from one end of the incision to the other. In general the anterior chamber was thus rapidly cleared; but in some cases in which small masses clung tenaciously to the pupil edges, the point of the nozzle was pushed on until actual contact, aided by the continuous flow, dislodged the mass and drove it out of the chamber. Two or three drachms of the solution generally sufficed, but not infrequently an ounce was used, and in a few cases two ounces or more. In no case was there any manipulation of the cornea after the escape of the nucleus, and in no case was any instrument such as the tortoise-shell scoop permitted to touch the corneal surface for any purpose. After having examined the wound to see that no portion of iris or remnant of capsule had insinuated itself between the lips, the eye was again flushed with the solution, a drop of atropine instilled, and a cheese-cloth pressure bandage applied.

In cases in which the lens was clearly milky, or in which the suspensory ligament was suspected to be weak, or the vitreous to be fluid, the lid speculum was removed before the introduction of the cystotome. The advantages of this precaution were illustrated in several of the cases. Almost without exception the operation was performed by the searching light supplied by a portable electric lamp furnished with a condensing lens. In this manner the presence of cortical remains can probably be detected better than by any other means—certainly better than by the best daylight. The operation was always performed in the recumbent position—when feasible on the bed which the patient was to occupy—otherwise on an operating table from which the patient was lifted to the bed by means of a sheet. The recumbent position was maintained for five or six days, permission being given to lie on the side not operated upon within an hour or two after the operation. The bandage was left undisturbed for three or four days unless there was some discomfort, which was rare. On the fifth or

sixth day the bandage was finally removed and a hollow eye-shade similar to that described by Dr. Gifford in the January number of the *Arch. of Ophthal.*, and which I have used for many years, substituted. When the healing process was slow the pressure bandage was retained until the wound was united.

The essential particulars of each case are presented in the following table:

No.—Age.	Quality of Cat- aract.—Func- tional Exam- ination.	Operation.—Incidents.—Course of Healing Process.—Du- ration of Treatment.	Resulting Vision.
1 72 F. Fair.	Glaucomatous. Previous iri- dectomy; lim- ited visual field.	Oct. 17, '88. Cortical abundant. Easily removed with a <i>comple- gouttes</i> armed with curved sil- ver nozzle. Air bubble entered chamber and removed by con- tinuing irrigation. 16 days.	Dec. 13, '89. +10 D. S.= ²⁰ / ₆₀ Media clear. Well-marked cupping of disc.
2 55 F. Good.	Hard. Mature. Normal.	Oct. 23, '88. Irrigation by means of pipette used in Case No. 1. Smooth. 12 days.	Feb. 12, '89. +12+1c Hor. S.= ²⁰ / ₄₀ . Feb. 13, '90. +12= ²⁰ / ₃₀ .
3 67 F. Good.	" "	Oct. 25, '88. Smooth. 11 days.	Jan. 11, '89. +5.5+ 2-5c 18°. S.= ²⁰ / ₃₀
4 72 M. Good. Family history of men- tal de- range- ment.	" "	Nov 15, '88. Ant. chamber irri- gated with specially devised syringe. 28 hours after opera- tion, patient discovered walking about hospital with bandages off. Delirious for 24 hours Smooth. 12 days.	March 4, '89. +13D. S.= ²⁰ / ₂₀ —
5 66 F. Feeble.	Hard. Mature. Projection not very good.	Dec. 12, '88. Cornea flabby and wrinkled after incision. Smooth. 10 days.	Jan. 4, '89. +9D. S. = ²⁰ / ₅₀ Media clear. Optic nerve atrophic
6 72 F. Good.	Hard. Hyper- mature, nor- mal.	Dec. 14, '88. Much cortical syninged out. Smooth. 11 days.	March 3, '89. +11+ 1.5c Hor. S.= ²⁰ / ₃₀
7 64 F. Feeble. Decid- ed men- tal heb- etude.	Hard. Mature. Apparently normal.	Feb. 15, '89. After irrigation formed. Capsule quite opaque. April 24, '89. Removed opaque capsule through a small corneal incision. 19 days.	Soon after operation about ⁹⁰ / ₂₀₀ June 5, '89, (after secondary operation) with +10 +1.5c Hor. S.= ²⁰ / ₄₀
8 58 M. Good.	Hard. Mature. Normal.	March 1, '89. Smooth. 10 days.	March 26, '89. +12.5 S= ²⁰ / ₃₀
9 55 M. Good.	Complicated. Partly tran- parent; always near-sighted. Normal.	March 1, '89. Syringe brought out considerable quantity of soft cortex. Smooth. 10 days. May 11, '90 States that eight months after operation received a violent blow on eye. Since which sight poor.	S.= ²⁰ / ₁₀₀ No glass helps. Media clear. Large staph. post. Says that up to ac- cident he "could read a newspaper through without glasses even by lamplight."
10 62 F. Feeble.	Hard. Hyper- mature. Pro- jection poor.	March 15, '89. Smooth. 12 days.	May 25, '89. +20. S. = ⁸ / ₁₀₀ Media clear. Disc atrophied. Sept. 3, '89. S.= ¹⁵ / ₂₀₀
11 67 F. Fair.	Hard. Mature. Normal.	March 15, '89. Smooth. 21 days.	May 22, '89. +12 D. S.= ²⁰ / ₂₀

No.	Age.	Quality of Cat- Sex. Heath.	Operation.—Incidents.—Course of Healing Process.—Dura- tion of Treatment.	Resulting Vision.
12	64	F. Hard. Mature. Good. Normal.	April 2, '89. Considerable cori- cal remains. Small masses per- sistently adhere to pupil mar- gins and detached by touching with syringe nozzle. Smooth 14 days.	May 23, '89. With +11+1.5c 5°. S.= 20/20— March 6 '90. Cannot see so well. Has been very ill for several weeks. S.= 20/100. Slight opacity of capsule. Discis- sion. May 14, '90. +10+1.5c Hor. S. =20/40 Slight opaci- ty of capsule re- mains.
13	71	F. Hard. Hyper- mature. Nor- mal.	May 6, '89. Smooth. 14 days.	June 20, '89. +9— 3c 8°. S.=20/40. Cap- sule opaque.
14	70	M. Hard. Mature. Good. Normal.	May 9, '89. Smooth. Patient be- came delirious 12 hours after operation, and remained so about 24 hours. 16 days.	July 7, '89. +10.5. S.=20/20
15	38	M. Soft. Traumatic. Extensive ant synechia.	May 10, '89. Iritomy with De Wecker's scissors. Soft lens ti-sue removed with syringe.	July 1, '89. +11. S.= 20/60 Some opacity of capsule.
16	65	F. Hard. Mature. Fair. Normal.(Oth- er eye enucle- ated after cat- aract opera- tion by another surgeon.)	July 9, '89. Smooth. 10 days.	Jan. 9, '90. +11 D. S.=20/30
17	22	M. Soft. Hyperma- ture. Good.	Oct. 2, '89. Nucleus small, most of lens remaining in ant cham- ber before irrigation.	April 2, '90. +10 D. S.=20/20
18	74	F. Cataract lactea. Good. Good.	Oct. 6, '89. Lens-matter like whey. Small nucleus. Smooth. 16 days.	Nov. 12, '89. +10 D. S.=20/30
19	84	M. Hard. Mature. Good. Normal.	Oct. 9, '89. Smooth. 10 days.	Nov. 26, '89. +11— 2 c, 170°. S.=20/20
20	60	M. Fundus reflex Good. good through periphery. S.= 2/200. Projec- tion normal	Oct. 12, '80. After expulsion lens remarkably transparent at margins. Clear lens-matter easily syringed out. Smooth. 10 days.	Nov. 16, '89. +11. + 2.25c Hor. S.= 20/20—
21	49	M. Good. R. E. Soft. Ma- ture. Normal.	Dec. 3, '89. Cortical abundant Syringed more than 2 ounces boric solution into chamber. Smooth. 11 days.	Dec. 30, '89. —5.— 3c Hor. S.=20/20 April 26, '90. +6. +1.25c 62°. S.= 20/20—

No.—Age. Sex. Health.	Quality of Cataract.—Functional Examination.	Operation.—Incidents.—Course of Healing Process.—Duration of Treatment.	Resulting Vision.
22 56 M. Feeble	Hard. Mature. Normal. Other eye removed for iridocyclitis after cataract extraction by another operator.	Dec. 6, '89. Operation clean and satisfactory. Night of 8th day, struck his eye during sleep. Mild attack of iritis which yielded to treatment in a few days. 15 days.	Jan. 9, '90. +6.5+ 2c Hor. S.= ²⁰ / ₃₀ April 17, '90. +7.+ .5c Vert. S.= ²⁰ / ₂₀ —
23 50 F. Good.	K. E. Soft. Mature. Normal.	Dec 9, '89. Smooth. 12 days.	Jan. 11, '90. +11+ 2.5c Hor. S.= ²⁰ / ₄₀ —, April 8, '90. Discussion of capsule. May 26, '90. +11+ 2c Hor. S.= ²⁰ / ₃₀
24 70 F. Feeble	Hard. Mature. Normal.	Dec. 12, '89. Smooth. 9 days.	April 2, '90. +11.+ 2c 138°. S.= ²⁰ / ₂₀ —
25 54 F. Good.	Soft. Hypermat. Normal.	Dec. 16, '89. Capsule very opaque except small point below. Smooth. 17 days.	April 23, '90. +8. S.= ¹⁰ / ₂₀₀
26 71 M. Good.	Hard. Hypermat. Normal.	Dec. 16, '89. Smooth. 8 days May 10, '90. Ophthalmosc. examination negative. Says he "can see better than ever."	March 13, '90. +9.+ 1c Hor. S.= ²⁰ / ₄₀ + May 10, '90. Media absolutely clear.
27 65 F. Good.	Hard. Mature. Normal.	Dec 20, '89. Smooth. 13 days.	Feb. 28, '90. +9.+2c, 178°. S.= ²⁰ / ₃₀
28 55 M. Good	" " "	Dec. 21, '89. Smooth. 12 days.	March 31, '90. +10. S.= ²⁰ / ₂₀ .
29 53 M. Good.	Completely fluid. Good.	Jan. 1, '90. On using cyst tome liquid lens-matter gushed out followed by vitreous, which was also fluid. <i>Syringe not used</i> Healing slow. 23 days.	March 13, '90. +8.5+ 2c 80°. S.= ²⁰ / ₄₀
30 56 M. Good.	Soft. Mature. Not tested.	Jan. 1, '90. Operation satisfactory. Iritis 9th day from exposure to a cold draught. Recovery in 12 days. Jan. 25, '90. Another attack from same cause. Recovery in two weeks. For safety, retained in hospital till 54th day. No synechie.	March 18, '90. +9.+ 1.75c Hor. S.= ²⁰ / ₆₀ +. Media clear. Nerve decidedly atrophic. Pupil free.
31 56 F. Feeble	Hard. Mature. Normal.	Jan. 1, '90. Smooth. 12 days.	April 3, '90. +12.+ 1c Hor. S.= ²⁰ / ₂₀
32 48 M. Good	Soft. Mature.	Jan. 4, '90. Operation satisfactory. Jan. 5, 28 hours after operation, found patient with bandage off. Eyes re-bandaged. Two hours later, patient again removed bandage, stole out of hospital, and went to his home, four miles away, walking much of the distance. 1 day.	April 23, '90. +11.+ 1c Vert. S.= ²⁰ / ₃₀ +—

No.—Age.		Quality of Cat-	Operation.—Incidents.—Course	Resulting Vision.
Sex.	Health.	aract.—Func- tional Exam- ination.	of Healing Process.—Dura- tion of Treatment.	
33	40 F	Soft. Hyperma- ture. Projection not good.	Feb. 11, '90. Nucleus 5 mm. in diameter. Cortex liquid. Smooth. 9 days.	Feb. 24, '90. $\frac{+}{-}$ S.D. S.= ²⁰ / ₂₀₀ Capsule clear. Floating opacities in vitreous.
34	76 M.	Hard. Hyper- mature. (7 years old.) Normal.	Feb. 22, '90. Vitreous escaped with lens. <i>Syringe not used.</i> Smooth. 11 days.	April 24, '90. $\frac{+}{-}$ 11— 1c Hor. S.= ²⁰ / ₆₀ Media transparent.
35	74 F. R. E.	Hard. Mature. Normal.	Feb. 22, '90. Operation satisfactory, although patient was very restless and almost unmanageable. Smooth. 16 days.	March 31, '90. $\frac{+}{-}$ 11. S.= ²⁰ / ₆₀
36	54 M.	Soft. Mature. Normal Stricture nasal duct treated before operating on cataract.	Feb. 28, '90. Smooth 13 days.	April 15, '90. $\frac{+}{-}$ 9— 1c Hor. S.= ²⁰ / ₃₀ May 15, '90. $\frac{+}{-}$ 9— 1.5c 10 ⁺ . S.= ²⁰ / ₁₅
37	68 M.	Hard. Hyper- mature. Pro- jection poor. Other eye light percep- tion, extreme- ly feeble.	March 4, '90. Patient nearly completely deaf and of feeble intelligence. Eye ball rolled incessantly. Still operation was completed pretty satisfactorily. But before the bandage was applied patient suddenly and violently snapped his eyelids together, rupturing capsule or zonula and forcing fluid vitreous from the wound. Healing process. smooth. 16 days.	March 20, '90. S.= Light perception. Vitreous muddy. Very small retinal detachment below and outward.
38	38 F. R. E.	Soft. Hy- permature. (6 years.) Normal.	March 11, '90. Much cortical syringed out. 11 days.	April 26, '90. $\frac{+}{-}$ 7.5— 3.5 S ^o . S.= ²⁰ / ₂₀
39	49 M. L. E.	Soft. Ma- ture. Normal.	March 26, '90. Abundant cortical syringed out. 11 days.	May 9, '90. $\frac{+}{-}$ 6—2.25c 172 ^o . S.= ²⁰ / ₁₂
40	61 M.	Complicated. Hypermature. Corneal opacities from old ulcers.	March 27, '90. Healing slow. 13 days.	April 18, '90. $\frac{+}{-}$ 11— 3.5c Hor. S.= ²⁰ / ₆₀
41	F.	Hard. Mature. Normal.	April 4, '90. Opaque capsule left. April 9, mild attack of iritis with no pain and but slight congestion. Pupil good size, but small synechia at upper part.	April 24, '90. $\frac{+}{-}$ 10— 1.5c Hor. S.= ²⁰ / ₆₀ May 12, '90. $\frac{+}{-}$ 9.5 —5c Hor. S.= ²⁰ / ₄₀

No.—Age.		Quality of Cataract.—Functional Examination.	Operation.—Incidents.—Course of Healing Process.—Duration of Treatment.	Resulting Vision.
	Sex.	Health.		
42	58 M.	L. E. Opaque in centre but translucent in periphery. Duration many years. R. E. in 1886, showed incipient cataract and marked signs of old choroiditis.	April 6, '90. L. E. Nucleus small. Syringed out large quantity of transparent cortical. Smooth. 9 days.	June 7, '90. $+12+1c$ Hor. S. $=\frac{20}{20}$
43	52 M.	Soft. Mature. Good. Normal.	April 6, '90. In using cystotome this instrument, acting as a hook, tore off anterior capsule leaving it attached just inside of wound. Nucleus small. Large quantity of cortical syringed out. Finally the reflected ant. capsule was removed with iris forceps. Smooth. 9 days.	May 13, '90. $+9+$ 1.25c Hor. S. $=\frac{20}{20}$ —
44	70 M.	Hard. Partly transparent. No change for several months. Normal.	April 8, 1890. Smooth. 9 days.	April 26, '90. $+10+$ 1.25c Hor. S. $=\frac{20}{40}$ — Capsule perfectly clear. Several small brownish patches on retina in macular region.
45	65 F.	Hard. Mature. Projection poor. Patient greatly addicted to alcohol.	April 8, '90. Smooth. 11 days.	April 25, '90. $+10$. S. $=\frac{20}{60}$ — Media perfectly clear. Decided bluish atrophy of disc.
46	64 M.	Cat. lactea. Duration at least 10 years. Normal.	April 11, '90. The instant cystotome touched capsule, most of lens spurted out in shape of thin whey-like fluid. Nucleus, 3 mm. in diameter, retreated into upper part of chamber, but was slowly coaxed down by manipulating upper lid. Pupil made jet-black instantaneously by use of syringe. Smooth. 9 days.	May 5, '90. $+9$. S. $=\frac{20}{20}$ —

No.—Age. Sex. Health.	Quality of Cat- aract.—Func- tional Exam- ination.	Operation.—Incidents.—Course of Healing Process.—Dura- tion of Treatment.	Resulting Vision.
47 60 M. Hard. Feeble Face deeply furrowed and covered with eczema.	Mature. Normal.	April 14, '90. Fye well in a week. Patient attacked with bronchitis on 8th day. Discharged cured 10 days later.	May 12, '90. $+10+$ 1c Hor. S. $=^{20}/_{40}$
48 V. F. Very feeble in body & mind.	Hard. Mature. Doubtful. Other eye no light perception.	April 16, '90. Operation satisfactory and everything favorable till 12th day, when slight congestion appeared with a burning sensation but no pain. 8 days later eye clear and pupil large, but a slight adhesion at upper pupillary margin. 20 days.	May 31, '90. $+10$ D. S. $=^{20}/_{200}$ Media perfectly clear. Nerve markedly atrophied.
49 61 F. Not good.	Hard. Hyper-mature. Normal.	April 19, '00. Incision completed with more than usual care and without dragging. Lens came well forward. On gently introducing cystitome lens retreated upwards a little. Tentative, expulsive movements caused vitreous to appear in wound. With wire scoop delivered cataract which was large and very hard and dark. Small bead of vitreous escaped. <i>Syringe not used.</i> 15 days.	May 14, '90. $-11-$ 1c Hor. S. $=^{20}/_{20}$
50 62 F. Fair.	Nucleus and post. capsule opaque. Other parts of lens translucent. Condition stationary for years. Very poor projection. Eye always strabismic & "weak."	April 21, '90. Sockets remarkably deep. Patient greatly agitated. Eye rolling constantly. Lens, on being expelled, was quite large and quite translucent except in centre and at posterior pole. Slight catarrhal conjunctivitis in both eyes. 8 days.	May 11, '90. $+8$. S. $=^{10}/_{200}$. Lower half of capsule clear. Part just above centre opaque. Floating opacities in vitreous. Large patch of atrophy of choroid below and to outer side of macular region.
51 75 M. Good.	Hard. Partly translucent. Stationary. Good.	April 28, '90. Lens on expulsion amber colored but transparent in periphery. Some cortex left in chamber, easily and quickly expelled by syringing. 8 days.	May 26, '90. $+8+3.5c$ Hor. $=^{20}/_{20}$

No.	Age.	Quality of Cat- sev. aract.--Func- Health. tional Exam- ination.	Operation.—Incidents.—Course of Healing Process.—Dura- tion of Treatment.	Resulting Vision.
52	75	M. Hard. Mature Good. Good.	May 12, '90. Nucleus dark. Unusual quantity of cortical synged out. Some catarrhal conjunctivitis. 12 days.	June 9, '90. +10+ 2c Hor. S.= ²⁰ / ₆₀ and improving. Slight opacity of capsule, apparently diminishing.
53	98	F. Hard. Mature. Good. Normal.	May 27, '90. Smooth. 12 days.	June 9, '90. +10+1c Hor. S.= ²⁰ / ₄₀ Cap- sule slightly opaque. Sight improving.

TABLE II.—SUMMARY OF VISUAL RESULTS.

²⁰ / ₁₂	-	-	-	-	-	-	1 Case.
²⁰ / ₁₅	-	-	-	-	-	-	1 "
²⁰ / ₂₀ +	-	-	-	-	-	-	1 "
²⁰ / ₂₀	-	-	-	-	-	-	6 Cases.
²⁰ / ₂₀ —	-	-	-	-	-	-	9 "
²⁰ / ₂₀	-	-	-	-	-	-	9 "
²⁰ / ₄₀	-	-	-	-	-	-	9 "
²⁰ / ₆₀	-	-	-	-	-	-	8 "
²⁰ / ₈₀	-	-	-	-	-	-	2 "
²⁰ / ₁₀₀	-	-	-	-	-	-	1 Case.
²⁰ / ₂₀₀	-	-	-	-	-	-	2 Cases
¹⁵ / ₂₀₀	-	-	-	-	-	-	1 Case.
¹⁰ / ₂₀₀	-	-	-	-	-	-	2 Cases.
O	-	-	-	-	-	-	1 Case.
Total	-	-	-	-	-	-	53 Cases.

I. E. Success in 98.1 per cent. Failure in 1.9 per cent.

Reviewing the cases detailed above we may consider

A.—ACCIDENTS AND ABNORMALITIES DURING OPERATION.

1. Air entered anterior chamber in one case (No. 1) owing to imperfect instrument. Result good.

2. Vitreous escaped in four cases—in three (Nos. 29, 34 and 49) immediately after exit of lens, so that the syringe was not used. In case No. 29 the lens, which was wholly fluid, gushed out at touch of cystome, followed by vitreous. In case No. 49 the lens was large and nearly black. Zonule ruptured during corneal incision, which was made slowly. On attempting expulsion vitreous presented in wound. Extraction effected easily with wire scoop—followed by small bead of vitreous. In case No. 34 moderate amount of vitreous followed lens. In the fourth case (No. 37) the patient was almost stone deaf, and besides, excessively restless. Nevertheless operation proceeded smoothly until the bandage was about to be applied, when a most violent orbicular spasm ruptured the posterior capsule and forced out a considerable quantity of watery vitreous, producing the only case of failure in the series. The three other cases had a good result.

3. Lens almost completely liquid in three cases (Nos. 18, 33 and 46), and completely so in one case (No. 29). Results in all good.

4. Cataract more or less translucent in five cases (Nos. 20, 42, 44, 50 and 51). Results in four good. In one (No. 50) only moderate, owing to antecedent disease of the vitreous and fundus. In this case the prognosis was bad, although an accurate diagnosis was impossible; but my habit is to operate on all cases in which there is a hope (happily realized in this instance) of even slightly ameliorating the patient's condition.

B.—COMPLICATIONS DURING THE HEALING PROCESS.

1. Slow healing of the wound in two cases (Nos. 29 and 40). In the first there was escape of vitreous, preventing the use of

the syringe. $V.=^{20}/_{XL}$. In the second the slow healing may have been due to the nutrition of the cornea being interfered with by old ulceration, which had led to corneal opacities. $V.=^{20}/_{LX}$.

2. Delirium in two cases (Nos. 4 and 14), perhaps from cocaine. One of them (No. 4) was eccentric, and family mental history not good. Result $^{20}/_{XX}$ and $^{20}/_{XX}$ —.

3. Iritis in four cases (Nos. 22, 30, 41 and 48). As this was really the only important complication observed during treatment, the cases may be analyzed in detail.

CASE 22.—Operation smooth. Syringe used freely. Eighth day condition of eye perfect. That night patient suddenly awoke in the act of striking his eye. Next day pain and other symptoms of iritis which subsided in a few days, leaving no adhesion. $V.=^{20}/_{XX}$ —. The other eye had been enucleated by myself for irido-cyclitis following cataract extraction by another surgeon.

CASE 30. Operation smooth. Syringed. On ninth day eye looked well. Carelessly exposed himself to cold draught from open window. Next day globe congested and soon livid and chemosed. Iritis subsided in 12 days. Several days later exposure to cold draught from a badly constructed door brought on another, similar attack. Recovery in about two weeks. No synechiæ. $V.=^{20}/_{LX}+$.

CASE 41. Very opaque capsule left at operation. On fifth day I observed evidences of iritis, but they were so mild that the patient was unaware of anything being wrong. Result, small synechia above. Capsule clear in limited area below. $V.=^{20}/_{LX}$.

CASE 48. Health and mind feeble and functional examination difficult. Operation smooth. Everything favorable till twelfth day, when slight congestion was noticed. No pain, but some burning complained of. The iritis subsided in about a week leaving a small synechia at upper part. Rest of pupil, which was large, was free, and capsule, except at point of adhesion, perfectly transparent. $V.=^{20}/_{CC}$. Marked atrophy of disc.

Of these four cases of iritis, two were apparently caused by exposure to cold, and one was due to a blow. The remaining one was doubtless connected directly with the operation. All but one were mild, and probably none had any serious effect on the resulting vision.

In the case in which the operation failed there was no inflammatory symptom. The wound healed promptly and kindly, and in a week the eye, externally, presented all the appearances of a successful extraction. There was in the whole series no case of irido-cyclitis or of suppuration, and, excepting in two of the iritis cases, no serious discomfort was complained of.

In view of the progress made in recent years, perhaps the time has arrived when we should no longer be content with the old idea of a successful cataract operation, viz.: one which in a general way restores sight, but should endeavor to procure the highest degree of acuity of vision attainable in each case. In order to determine the methods by which this result may be most easily arrived at, it is desirable not merely to compare the final visual results reached under different methods, but to inquire into the circumstances under which, in each case, these results were brought about. No surgeon operates on a totally blind eye, *i. e.*, every man "selects his cases;" but, owing to differences of temperament and other causes, this selection is made by different operators, and even by the same operator at different periods, according to rules which are far from uniform. For this reason, two men exhibiting equal skill, and pursuing the same method, may obtain visual results which are widely different.

It may be assumed that the best method of operating for cataract is the one which, other things being equal, enables us most completely to eliminate all obstructions to vision referable to the lens, in other words to make the operation surgically complete. As a contribution to this part of the subject, the following table has been prepared, giving, in all of my cases showing $\frac{20}{XL}$ or less, the causes, so far as ascertained, of the imperfect vision:

TABLE III.—SUMMARY OF CASES OF $\frac{20}{41}$ AND UNDER
WITH CAUSES.

<i>Total.</i>	<i>Capsule Opaque.</i>	<i>Undetermined</i> <i>Irrig. As. &c</i> <i>Opacity of</i> <i>Cornea.</i> <i>Escape of</i> <i>Vitreous.</i> <i>Opacities in</i> <i>Vitreous.</i> <i>Retinal Disease.</i> <i>Staphylocoma</i> <i>Posticum.</i> <i>Choroidal</i> <i>Atrophy.</i> <i>Atrophy from</i> <i>Glaucoma.</i> <i>Atrophy of Nerve.</i> <i>Vision.</i>
9	4	
8	2	
2		
1		
2		
1		
2	1	
1		
3		
5		
7		
26		

Thus of 53 cases operated upon, 7, or 13.2%, have been thus far left with opacity of the capsule, whereas in 45 cases (excluding the case of failure, and including the cases with $\frac{20}{xxx}$ and better), *i.e.*, in 84.9%, the operation was surgically complete.

Secondary Operations.—The statistics presented above show the results obtained without any secondary operation on the capsule except in three cases (Nos. 7, 12 and 23). In the first, an opaque capsule was removed through a small corneal incision, raising the vision from $^{20}/_{\text{cc}}$ to $^{20}/_{\text{XL}}$. In the second, discission raised the vision from $^{20}/_{\text{c}}$ to $^{20}/_{\text{XL}}$, but the operation was incomplete, and slight opacity still remains. In the third the sight was improved by discission from $^{20}/_{\text{LX}}$ to $^{20}/_{\text{XXX}}$. In other words, excluding the case of failure, 42 cases (including

all but one of the cases of ²⁹/_{XXX} and better) i.e., 79.4% of all the cases operated upon, required no secondary operation.¹

GENERAL REMARKS AND CONCLUSIONS.

There are several points in regard to the above reported series of cases that seem worthy of note:

1. The absence, excepting in one case (No. 41), of inflammation or irritation directly referable to the operation, and the absence, also excepting in one case (No. 30), of inflammation from any source serious enough to cause anxiety.

2. The large proportion of cases in which a high degree of visual acuity was obtained.

3. The large proportion of cases in which the operation was surgically complete, i. e., in which no capsular opacity remained to be treated by secondary operation. (I make no note of the absence of suppurative inflammation because purulent processes, as remarked by Sattler², Knapp³ and others, are of late becoming more and more rare.)

These advantages I cannot but think attributable in a large degree to the fact of the anterior chamber being so thoroughly cleared of residual cortex. No matter whether we agree with DeWecker⁴ that inflammation after cataract extraction is due to sepsis conveyed through a migration cicatrix (*cicatrice à migration*), or with Meyer⁵ that the sepsis is sometimes endogenous, or whether we hold that many cases of inflammation, whether purulent or non purulent, may be purely traumatic, it must be generally admitted that, whether simply as foreign material, or as a nidus for microbic multiplication, cortical remains may act as a predisposing cause of inflammatory action. It appears reasonable, also, to suppose that they may, by ad-

¹It is probable that a number of these cases will in time develop "wrinkled capsule" and so require surgical interference. If so, an opportunity of recording such changes may present itself.

²Quoted by Knapp, Arch. of Ophth., vol. xvii, p. 69.

³Ibid.

⁴Annales d'Oculistique, c 1, p. 168.

⁵Annales d'Oculistique, c 2, p. 13'.

hering to the capsule, cause or increase its opacity, and thus partially frustrate the object of the operation.

From all points of view, then, it seems proper that we should seek the means by which lenticular debris can be most gently, quickly and thoroughly removed. My own belief is that manipulation of the cornea is inadequate—may, when prolonged, be injurious—and that the end in view is best attained by irrigation. In addition to thoroughly evacuating the anterior chamber, the syringe gently replaces prolapsed iris, and completely cleanses the lips of the wound, thus securing perfect coaptation and rapid healing, and, incidentally, preventing the entrance of germs.

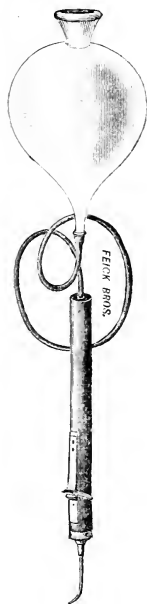
From what has preceded it is evident that I do not regard the injection of a few drops of an antiseptic solution in order to sterilize the contents of the anterior chamber, as fulfilling all the requirements. It may be doubted, without disrespect to the distinguished men who make use of this procedure, whether it accomplishes even the limited object aimed at; for an antiseptic, to be effective, must surely be dangerously irritating to the delicate structures in the interior of the eye.

But in point of fact antisepsis in surgery tends more and more to be replaced by asepsis. Germs are now flooded out, instead of being destroyed *in situ*. I believe the crowning glory of our era, in so far as surgery is concerned, to be the development of the science and art of cleanliness. In accordance with this view, the solution I use is not, strictly speaking, antiseptic. Practically, it consists of boiled distilled water containing just enough boric acid to prevent the injurious effects which have been found by myself and others to follow the use of water alone.

In order that irrigation of the anterior chamber may be accomplished effectively and safely it is important to employ a suitable instrument. At the last meeting of the American Ophthalmological Society, I read a paper on this subject⁶, and described a syringe which consisted "essentially of a bit of black rubber tubing with a curved flat gold nozzle at one end

⁶Trans Amer. Ophth. Soc. for 1889, p. 341.

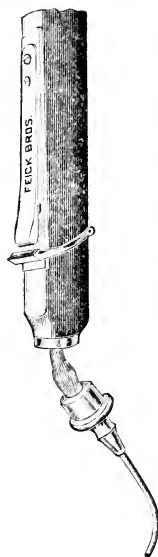
and a small metal reservoir at the other." The tubing passed through a hollow hard rubber handle in which was fixed a short piston controlled by the index finger, and serving, by pressure on the rubber tubing, to stop or retard the current, Soon after that meeting, in order to be able to dispense with



Form 1.



Form 2.



Actual Size.

FIGS. 9, 10, 11.

an assistant, as well as to secure a uniform pressure, I had the instrument made in the form in which you see it (form 2). The reservoir, which is of glass, is attached to the upper end of the handle, and will hold about an ounce. This is sufficiently

large, because even if two or three times this quantity of fluid is required, the patient will be benefited by the momentary respite obtained while the reservoir is refilling; and the objections made to a second or third introduction of the nozzle are, in my opinion, entirely groundless. If, however, a larger reservoir is desired, and an assistant is available, the necessary change in the form of the instrument is easily effected by substituting a longer piece of rubber tubing.⁷

This syringe, as modified, has been used in the great majority of the cases reported in this paper; and, from experience during the year just past, I am in a position to reiterate with confidence the following statements made in the article referred to:

"1. As there is no backward flow, it (the syringe) has no tendency to become septic in use except at the point of the nozzle, and the latter can be readily pulled off and thrown into boiling water or alcohol. If the purity of the other parts of the apparatus is suspected, it is easy to place the reservoir in boiling water, and to replace the old rubber tubing with a new piece.

"2. This instrument can always be depended upon to work smoothly.

"3. It is held like a penholder, and is as easily and securely handled.

"4. As the ejecting force is proportional to the height of the column of liquid, it is of course under absolute control. * * *

Should a *per saltum* movement be desired, this can be effected * * * by intermittent pressure on the short piston.

"5. It goes without saying that in using this syringe there is no possibility of the entrance of air into the eye."

The instrument was made for me by Feick Bros., surgical instrument makers of Pittsburg, Pa.

⁷The syringe is made in such a way that forms 1 and 2 are quickly interchangeable. Thus the small reservoir may be removed from form 2 and the metal framework slipped off. All that remains, then, is to insert the small hard-rubber nozzle (which will be found at the lower end of the tubing belonging to the large reservoir) into the tubing which remains in the handle. The large reservoir can be fixed to an upright post attached to the bedstead, and the height regulated by a set-screw.

ELIMINATION OF THE CORNEA AND ITS EFFECT
UPON THE REFRACTION OF THE EYE.
THE DEVICE FOR ITS DEMON-
STRATION MODIFIED.

BY DR. CARL KOLLER, NEW YORK, N. Y.

Read before the Section on Ophthalmology of the New York Academy of Medicine,
May 21, 1890.

The Eye Under Water.—An old and well-known experiment shows that the fundus of an eye becomes visible without any further apparatus when the eye is placed under water. Provided that the pupil is large enough, one sees the optic disc and the retinal blood-vessels clearly defined in about their natural size. The reasons for this are obvious and identical with those which Helmholtz has given in order to explain, why, under ordinary conditions, we cannot see the fundus, and which have led him to the invention of the ophthalmoscope.

The investigators who had tried to explain the light seen in animals' eyes, as Joh. Mueller, Donders, and especially Bruecke, had already approached the truth, namely, that it is the position of the retina in the posterior focal plane of the dioptrical system, which prevents the light from issuing from the eye in another direction than that in which it entered the eye. Let us suppose a light is thrown from a certain point into the eye, and thus illuminates a portion of the retina. This portion of the retina now can be considered in itself as a source of light, but one, from which the light can go out in one direction only, that is, toward the original light-point. The whole cone of light, coming from the light-point in the retina when issuing from the eye at the anterior surface of the cornea, is refracted to a bundle of parallel

rays, which are also parallel to the so-called line of direction. This line of direction is the straight line drawn from the original point of light to its image on the retina. This relation makes it impossible, under ordinary circumstances, to see a portion of the retina lighted or light-giving. For if we place our eye behind the source of illumination it will be blinded by the light and will not be able to perceive the relatively weak light issuing from the fundus—and if, on the other hand, we place our eye between the eye under observation and the source of illumination, we shut out the light with our own head. Therefore, the pupil of an eye always appears black. In order to see the fundus of an eye, we have to make an arrangement which overcomes this difficulty. One arrangement of this kind is the principle which Helmholtz has used in his ophthalmoscope; another, that which later on Ruete applied to his ophthalmoscope. As Helmholtz, modestly speaking about his great invention, himself expressed it—to construct the ophthalmoscope it was only necessary to have clearly before one's mind the reasons why it is impossible to see into an eye under ordinary conditions.

With the eye situated under water the ordinary optical conditions are changed. The exterior surface of the cornea does no longer border on the air, the most active part in the whole dioptric system; it is surrounded by water, which has the same index of refraction as the corneal substance, and, therefore, eliminates the cornea in an optical sense. If the fundus is lighted with diffused light there is no reason why the light issuing from the fundus should not disperse in all directions, and indeed we can see the fundus of an eye under water from any direction.

Irideremia with Dislocation of the Lens.—The conditions in certain cases of irideremia with dislocation of the lens are similar. While assistant in Utrecht I saw a man whose right eye presented the following appearance as the result of a blow received many years ago: There was no iris visible; either it had been torn out of the eye, as it sometimes occurs, or it was folded backwards into the vitreous body. The lens was

dislocated downwards and its upper margin and upper half were visible in the lower half of the enlarged pupil. When the man was placed with his face toward the window—best opposite to a white cloud—one saw without applying any especial apparatus the optic disc and the retinal vessels very distinctly. The explanation of this phenomenon is this: By the incomplete dislocation of the lens, the unity of the dioptric system of the eye was destroyed. There were two optic systems, one lensless and one with the lens. The axis of the latter formed an angle with the axis of the former on account of the prismatic action of the partially dislocated lens. Light which had entered the eye in the one could leave it by the other. The observer did not shut out the light with his own head, as he does under normal conditions of the eye, and the great amount of light which could enter this irideremic eye furthermore increased the possibility of seeing the fundus.

Here, I like to mention, also, the interesting phenomenon of the appearance of the two discs when the observer looked in the usual way into the eye with the ophthalmoscope (inverted image.) The lens, occupying half of the pupil, acted as a prism, and through this another image of the fundus was produced besides the one seen through the lensless part of the pupil. These images were of different size, the upper one considerably larger on account of the hypermetropic refraction of the lensless system; they were, furthermore, not in the same plane, the one seen through the lensless system being nearer to the observer. Corresponding with the double ophthalmoscopic image, the patient had monocular double vision. The visibility of the retina in detachment and in cases of intraocular tumor, is due to the same reason, namely, that the retina is no longer situated in the posterior focal plane of the optic system, and thus all causes disappear why it should not be visible.

Bellarminoff's Device to Make the Fundus Visible.—Several years ago Bellarminoff has modified the experiment with the eye under water. After anæsthetizing the cornea with cocaine and dilating the pupil, he presses a plain glass plate

against the cornea, thus flattening it and eliminating its optical action. In this way the fundus becomes visible. Bellarminoff thought he had invented a method which could take the place of ordinary ophthalmoscopy, and which could be used without any previous practice. It seems to me that it is much more desirable that every physician should learn and practice the ordinary method; but the experiment in question is, nevertheless, an interesting and striking illustration of optical conditions.

Modification of Bellarminoff's Device.—In modifying Bellarminoff's experiments, I had glass shells made similar to artificial eyes, with a plain—concave meniscus in the place of the cornea, the concave side inside, the plain one outside. Mr. Brière, a skillful maker of artificial eyes, was kind enough to take great pains in making these shells. Such a shell is easily inserted into the conjunctival sac in front of the eye, previously anesthetized by cocaine, and is so nicely kept in place by the lids, that it is unnecessary to press the glass plate against the cornea. I dilate the pupil previously with homatropine. If the conditions are favorable—that is, if the light of a white cloud is available and the strong reflection from the anterior plane surface is avoided by moistening it with a drop of water—one may see the fundus without resorting any further to reflected light. It will show better when strong light—either the light of a cloud or artificial light—is thrown into the eye by means of a reflector. The optic disc and the retinal vessels appear with great clearness; in their small size they present a striking and unexpected spectacle. They appear of nearly ordinary size, while we are accustomed to see them considerably magnified through the optic system of the eye, when looking at them in the ordinary way of ophthalmoscopy. The large field of vision obtained is also remarkable.

Size of the Disc when seen Through the Plane-Concave Meniscus.—When the eye is under water the fundus is actually seen a trifle magnified. The anterior surface of the cornea being eliminated and the separating surface between water and air being a plane one, there

would not be any magnifying power if the lens were not present.

The index of refraction of the vitreous and aqueous humors, corneal substance and water being the same (1.3365), except for the presence of the lens, the conditions would not differ from those of a posterior part of an eye situated under water after removal of the dioptric part of the eye. The lens in its place represents a refractive power of 10 dioptries. A simple calculation shows that the magnifying power amounts to about 6:5, so that a disc of the size of 1.5 mm. appears to have 1.81 mm. in diameter. But this holds good only when the curvature of the cornea is eliminated by the water. The conditions are changed when a meniscus of glass is used for that purpose. Taking the index of refraction for glass to be 1.5 on an average, the glass-meniscus in front of the less refracting cornea will act as a concave lens and therefore will make the fundus appear smaller.

A simple calculation shows the following: A disc of the actual size of 1.5 mm., which, when simply seen under water would appear 1.81 mm. large, has an apparent size of only 1.37 mm. when seen through the glass meniscus, which corresponds to a diminution of 9:10.

Possible Utility of the Device.—As to the possible practical value of the device described, I have to offer a suggestion. It might be used for determining the location of ecchinococci, foreign bodies, or obscuring membranes in the vitreous (provided the lens is transparent and the pupil can be dilated). In all of these instances we have to resort to calculation. Alfred Graefe's admirable results in operating for ecchinococci show his method of determining the place to be very exact. Still, it might effectually be supported by an additional examination of the fundus with the cornea eliminated in an optical sense. This might be even more useful in operations for lacerating obscuring membranes in the vitreous, an operation which has been introduced by A. v. Graefe and has been practiced lately to a larger extent by C. S. Bull.

Operations have to deal with distances and conditions as we ordinarily see them with our naked eyes only, without interference of any optical apparatus, and as such the cornea in front of the vitreous body must be considered. Elimination of the cornea probably will allow a better view and, so to say, more natural conception concerning the extent and situation of such membranes.

TWO CASES OF GUNSHOT WOUNDS OF THE EYEBALL.

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Two things have probably happened when the eyeball recovers from the effects of a penetrating wound sufficiently to permit of the safe retention in the orbit, viz: the foreign body has not entered at the ciliary region and it has again passed out of the globe. I am aware that there are remarkable exceptions¹ to this rule but they are quite uncommon. Even where the foreign body lodges in the substance of the posterior bulbar wall and projects into the vitreous its presence is very likely to set up purulent choroiditis before the process of encapsulation has had time to go on².

The disastrous consequences of penetrating wounds in the "dangerous zone" of the ciliary region follow in the gunshot injuries in common with other forms of traumatism but there are some peculiarities attending the former kind of injury which render it less dangerous than others, both in the ciliary region and elsewhere.

Indeed cases of recovery after gunshot wounds, with retention of a certain amount of vision, are not infrequent. Provided the projectile (or projectiles as in the case of small shot) be not too large the chances of ultimate vision are, *ceteris paribus* greater than in such forms of violent injury as stabs, wounds from glass, metal splinters, or bits of percussion caps, ruptures

¹One of these is recorded in Carter & Frost's "Ophthalmic Surgery." English Ed., p. 271.

²Leber in Graefe and Saemisch, Bd. v, p. 745.

of the sclera from blows, etc. When a knife blade, a glass splinter or a piece of chisel penetrates the sclera it is more likely to carry infective germs into the cavity of the eyeball than is a shot already disinfected by the burning powder and by its friction with the air through which it passes³.

Less likely also is the shot to disturb the ocular membranes, to make a ragged wound, or to remain in the cavity of the globe. It goes through and makes a "clean" passage; the wound shortly heals and it is afterwards often difficult to discover any external evidence of its entrance.

In scleral ruptures and in penetrating wounds made by the agent just mentioned the probability of other accidents is also greater than when small shot enters the eye. Among these are dislocation of the lens, retinal detachments, loss of vitreous and extensive intraocular hæmorrhages.

In a word, so far as the eye is concerned *the effects of wounds made by small pistol bullets and the various kinds of bird or buckshot are confined to the tissues through which they immediately pass* while the lesions resulting from scleral ruptures and penetrating wounds of other kinds are more far reaching and destructive in character. The following cases are examples of recovery from gunshot wounds:

The first one is an illustration of Noyes' declaration that in these cases of gunshot wounds it is "impossible to decide what has happened." It is also an example of those rare instances where small missiles, other than birdshot, have gone completely through the globe.

Walter H., æt. 21 years, came to me at the Moorfields (London) clinic of Mr. Lang in July, 1889, and gave the following account of himself:

At the age of 14 he was shot in the face, receiving a charge from a shotgun loaded with small pieces of stone (shingle). He was about a dozen yards distant from the gun when it exploded. Pieces of stone were removed from his "mouth" and face but none, as far as could be ascertained, from the eye.

³"Manuel d'Ophtalmologie." DeWecker et Masselon, p. 62.

He suffered from severe headache for a month after the injury during which time there was no sight whatever in the wounded eye. Then it began slowly to return and he now sees as well as he has done for several years past. On making a careful examination some slight scars were found on the face and one small one on the left lower lid about 4 mm. from its margin and equidistant from the inner and outer canthus.

This latter cicatrice corresponds to a whitish puckering of the palpebral conjunctiva which, however, is situated a little higher up than the dermal scar. Patient says there was no wound of the eyeball and no scar of cornea or sclera can be discovered. His eye was perfectly sound before the injury and he thinks there has been no variation in his visual power for many years. When he closes his right eye he does not see the middle of objects fixed by the left eye. The top and bottom of articles of furniture and the periphery of smaller objects are distinctly visible, but their central portions are not perceived. This partial vision in the left eye has never bothered him. He has not had diplopia or squint.

R. E. V.= $\frac{6}{V_1}$; L. E. V=fingers at 3 metres.

Left eye—pupillary reaction to light and accommodation (convergence) normal. Of a quill pen held 50 cm. in front of the eye he sees only the two ends and not the middle part. No improvement from glasses. Tension normal. An ophthalmoscopic examination of the left fundus shows the media to be clear; there are absolutely no opacities in the vitreous. The papilla has a small and deep physiological excavation. From its lower border there projects a slight elevation the refractive difference between whose base and summit is about one diopter. It is kidney shaped, about one half a disk diameter in length and about half as broad as it is long. Its summit is quite white and is studded with cholesterine crystals, the whole making a beautiful ophthalmoscopic picture. The macular region is the seat of an old choroiditis with blotches of pigment. Three disk diameters directly outwards towards the temporal side of the disk is a large atrophic area, whitish in color, over whose surface are scattered small spots of pig-

ment. The retinal vessels are not diminished in size and they run over the pigmented dots in several places. The infrapapillary elevation is free from pigmentation. Here and there in the area of choroidal atrophy an occasional crystal of cholesteroline is to be seen.

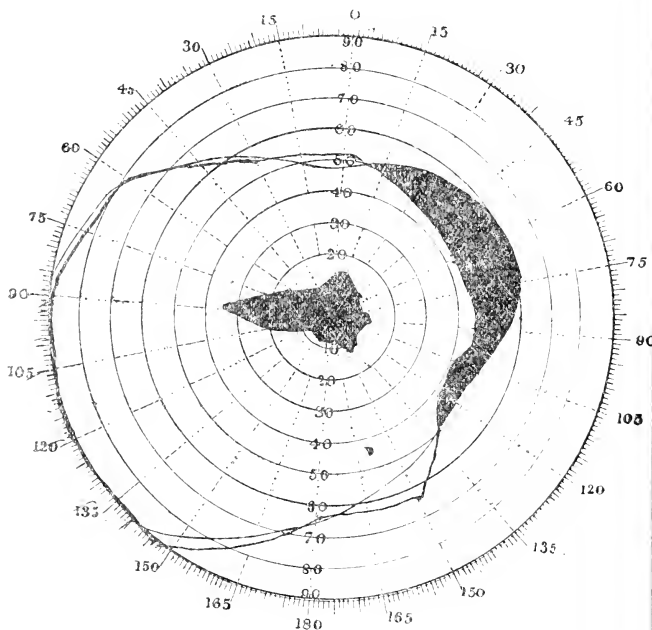


FIG. 12.

The absolute scotomata corresponding to the injured fundus are shown in the accompanying perimeter chart.

It will be seen that the periphery of the field is quite uncontracted, excepting a restriction of the (apparent) inner side,

the important loss of vision being chiefly confined to an irregular area about the fixation point.

If one might venture a guess as to what happened to this eye seven years ago it would be that more than one small splinter of stone has pierced the globe outside of and yet quite close to the ciliary body, passed through the vitreous and penetrated the opposite sclerotic wall in more than one situation. It may be that the projection at the nerve border corresponds to an encapsuled foreign body part of which is still in the sclerotic coat. The peripheral contraction of the field is doubtless the result of an injury to one or more bundles of temporal nerve fibres (supplying that part of the retina) as they issue from the papilla; it does not express the presence of a large nose during the several examinations made. It was impossible to discover behind the overhanging iris any ophthalmoscopic indications of the exact spot where the foreign bodies entered the eye.

There is nothing abnormal about the fundus of the right eye, in which he has never had any indications of sympathetic trouble.

The next case shows an injury far more extensive than the preceeding and yet the eye was not lost nor was vision entirely abolished.

It is that of an Italian, I. B., æt. 30 years, who presented himself at Dr. Coleman's clinic in the Post Graduate School. Fifteen years before he had been shot in the left eye, several small shot having entered the globe. After the accident he was not able to see very much but his vision was then better than it now is. This is explained by the fact of his having been struck in the same eye with the fist two years ago. Since that time his vision has been getting gradually worse. About the centre of the left lower lid, 10 mm. from its margin, is a round cicatrix 3 or 4 mm. in diameter. This corresponds to a scar, somewhat smaller in size, in the palpebral conjunctiva. When the patient looks in front of him this scar is in contact with a puckering in the anterior wall of the eyeball—a puckering which includes both ocular conjunctiva and sclerotic coat.

The depression is plainly seen when the patient looks upward and it has about the same diameter as the external lid wound.

V. L.=fingers at 30 cm. eccentrically.

V. R.= $\frac{6}{VI}$.

When the right eye is covered patient directs his gaze to one side for the purpose of seeing objects directly in front of him, yet he does not squint. He has not in either eye nor has he had for years any pain, tenderness, or lachrymation. Tension in left eye normal; pupil very little affected by light. The eye is perfectly "quiet." The cornea is clear; iris of normal color but tremulous. The lens is translucent only and is dislocated upwards. It is not possible to see the fundus. Dr. Coleman decided to remove the crystalline and as a precautionary measure made use of Agnew's bident. The patient recovered from the operation without a bad symptom. Two weeks afterward his eccentric vision had slightly improved. An examination of his fundus could now be made and it revealed a rather curious state of things. A large whitish area occupied the infra-macular region and stretched irregularly, as far as could be seen downward and to the nasal side of the disk. A portion of the margin of this irregular spot was plainly marked and looked like the border of a choroidal rupture. The whole area was probably three disk diameters across in its widest part and was almost entirely white, there being little or no scattered pigment to be seen. Refractive differences of about half a diopter could be made out in various parts of this abnormal locality. The papilla is not of markedly abnormal color. The blood vessels are not atrophied except those of them that stretch into the area just mentioned. Two vessels (arteries?) appear to run toward it from the disk down and inward, but do not appear near the margin. I could not determine whether the retina had its normal appearance in all parts or not. There was enough opacity of the media to prevent a clear view of the fundus details by the direct method. At any rate there were certainly no gross lesions in the disk or in the macular region.

The accompanying chart can only be approximately correct as it was not possible to secure accurate central position, but it

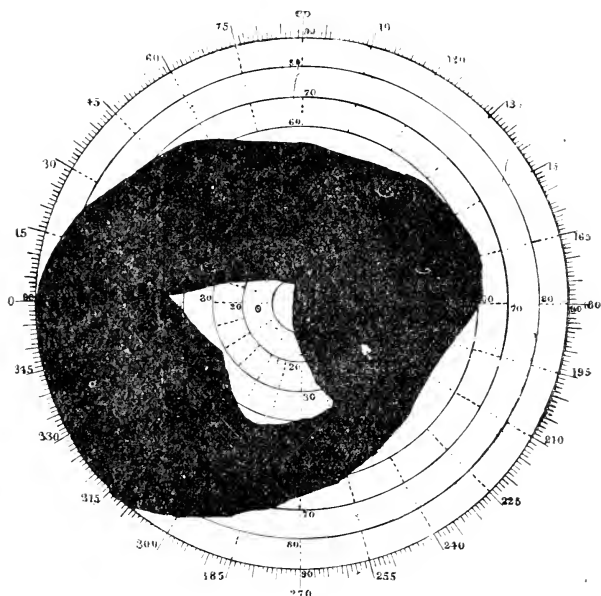


FIG. 13.

indicates fairly well the extent of the visual field so far as it concerns a white object 20 mm. square at 50 cm.

OBITUARY.

DR. H. CULBERTSON. 4

ZANESVILLE, O., June 19, 1890.

ADOLF ALT, M.D., *Dear Doctor*.—I have to communicate to you, that my father, Howard Culbertson, has passed away. His death occurred yesterday, and was caused by acute dysentery. His illness was brief, lasting less than a week.

Respectfully yours, LOUIS R. CULBERTSON, M.D.

In communicating this letter to our readers we need feel the sad loss with the bereaved family. All our readers know how enthusiastic the late Dr. H. Culbertson was as a collaborator of this journal. He was an earnest seeker after truth, and by his prisoptometer he has gained for himself a reputation beyond the limits of his own field of work. His memory will be sacred among us.

PUBLISHER'S NOTICE.

The demand for full files of the AMERICAN JOURNAL OF OPHTHALMOLOGY is so great, that the supply of some numbers is exhausted; 25 cents per copy will be paid for either of the following numbers:

Vol. 3. No. 11, Nov. 1886.

“ 4, Nos. 4 and 10, April and Oct., 1887.

“ 5, Nos. 1, 4, 5, 6, 7 and 8, Jan., April, May, June, July and August, 1888.

“ 6, No. 1, Jan., 1889.

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THE AMERICAN JOURNAL OF
OPHTHALMOLOGY.

VOL. VII.

AUGUST, 1890.

No. 8.

A CASE OF GLAUCOMA FULMINANS OF
PECULIAR INTEREST.

BY PETER D. KEYSER, M.D.,

Professor of Ophthalmology Medico-Chirurgical College, Philadelphia.

At the meeting of the American Medical Association, June, 1889, at Newport, R. I., I read a paper on Fulminating Glaucoma after Cataract Extraction with Iridectomy, giving three interesting and instructive cases. Since this time, having had a case of acute glaucoma of a similar character and a case as the first described cases but with such difference as to time and character of operation I think it well to be presented to the profession and therefore relate the following:

Mr. D. R. Young, æt. 64 years, of this city, came to me with cataract L. E.—R. E. divergent and amblyopic since childhood. The cataract had been gradually forming for about three years and at the time (Jan. 18, 1890) when I first saw him the lens was opaque. P. and P. perfect, and pupil fairly active under the action of light.

I made extraction of the cataract with large iridectomy upward, and all healed readily and well in a few weeks. After the third week the posterior capsule began to thicken and

eventually became quite opaque in the centre covering the pupillary region. This interfering with vision I determined to get it out of the way. With a fine Heyl's knife I attempted to lacerate it with the hopes that it would separate and thus give a clear hole, but it was so tough that the knife could not cut it. Then on March 26, eight weeks after the extraction, I drew the whole capsule out on a Tyrell's hook through a small opening in the cornea. The operation went off very well under cocaine, 2% solution, and he saw much clearer and more distinctly at once. Atropine had been instilled into the eye to dilate the pupil for the operation, and as an iridectomy had been previously made, and in the last operation the opening in the cornea was so small with no iris near it, no more atropia was used after the operation. The eye was well washed out before and after the operation with a x.gr. solution of boric acid, and a single Liebreich bandage put over it.

The eye was very quiet and easy until, toward morning, severe pain set in, and when I saw it the day after the operation there was a well marked case of glaucoma fulminans. The tension of the ball was +3, a slight hæmorrhage in the anterior chamber, exquisit pain in the ball extending up through the temple into the head. The iris was pushed forward.

Vision still good but dimmed. Eserine salicylate, gr. ij.℥j., was ordered instilled into the eye twice daily.

Applications of warm destillate of Hamamelis over the eye and morph. sulph. gr. $\frac{1}{4}$ doses to relieve pain. During March 28 and 29, there seemed to be but little relief except the absorption of the hæmorrhage, and I was thinking of making another iridectomy, but on the following day the eye was much better, and continued to improve until April 5, when severe pain again set in but no hæmorrhage took place. I then applied the artificial leech to his temple and gave him calomel gr. $\frac{1}{4}$ every hour. The artificial leech was applied again April 8 and the eye began to improve. Vision all this time kept good.

April 22, another slight attack of pain with light hæmorrhage in the anterior chamber. Artificial leech again applied.

Eserine instilled into the eye. From this time the eye went on to a healthy condition so that on June 5, with $+10\text{C}+2$ Cyl. 180° he has a vision of $\frac{6}{c}$.

This is another of those special cases of acute glaucoma that at times appear unexpectedly, and in eyes in which from their peculiar condition after a free or rather large iridectomy with extraction of the lens it would not in the least have been looked for, and in this case it appeared only after the extraction of the capsule two months after the cataract operation. I would say that the capsule was very readily drawn out without any stirring up of the vitreous. The whole operation was a very simple and easy one such as is frequently done in such cases.

CORRESPONDENCE.

AMERICAN OPHTHALMOLOGICAL MONOGRAPHS.

We publish the following letter, in the hope to help the worthy undertaking along.

CINCINNATI, O., June, 1890.

DEAR DOCTOR.—The undersigned will, if he meets with sufficient encouragement with the first number, undertake the publication of a series of monographs and essays upon ophthalmic subjects, to be entitled "American Ophthalmological Monographs." They will be issued at irregular intervals; at a price of one dollar a number, payable after delivery of each number.

The design is to furnish a medium through which can be published works of merit that at present have little or no chance of ever seeing the light. We refer to a class of works, so many examples of which appear in Germany and France: Essays that are so long, or so expensively illustrated that the journals can not afford the expense or space for them, and no publisher here will face the almost inevitable loss that meets their issuance in pamphlet or book form. For example, the Monograph on hand ready to issue as the first number will make seventy to eighty pages, with some ten or twelve colored and lithographic plates. No matter how great the merit of such an Essay, no publisher will touch it in this country.

Again, as such material is usually the work of the younger men of limited means (for those with large practices generally can not find the time necessary for original and laborious work of this character) their publication can not, as a rule, be as-

sumed by the authors on the score of the great attendant expense.

If, however, a method of co-operation be utilized, the difficulties can be easily avoided. With a list of subscribers assured; and some pages of selected advertising utilized, the expense can be guaranteed. We hope you will think enough of this movement to at least make the trial of getting out one number. If so, sign the enclosed blank and return it to

Yours very sincerely, DAVID DEBECK, M.D.,
Ass't to Chair of Ophthalmology, Medical College of Ohio,
Cincinnati, Ohio.

AFFECTIONS OF THE CORNEA FOLLOWING ADMINISTRATION OF THE BROMIDES.

OMAHA, NEB., July 27, 1890.

EDITOR AMERICAN JOURNAL OF OPHTHALMOLOGY.—Allow me to inquire through the pages of your journal whether any of its readers have seen affections of the cornea follow the prolonged administration of the bromides. The inquiry is prompted by the following case: H. T., æt. 15 years, unusually strongly-built boy, five years ago fell, striking the back of his head violently. After this he began having typical epileptic convulsions. These were controlled by bromide of potassium, the dose running sometimes as high as 70 grs. a day, but most of the time 40 grs. a day was given. In the spring of 1889, while taking 40 grs. daily, L. E. developed a keratitis which I first saw several weeks after it commenced in the form of a sharply circumscribed central corneal infiltration about 5 mm. in diameter; epithelium over this stippled but no loss of substance; no history of traumatism. Under heat, quinine and yellow ointment, this infiltration did not clear up but remained as a permanent opacity. The bromide was stopped during the course of the affection, but as the convulsions returned it was again resorted to in the same doses as formerly. This June while on 40 grs. daily, R. E. became affected without

traceable cause; seen by me about 3 days after. Examination showed very fine linear branching losses of corneal epithelium, beginning at upper outer limbus, one line reaching centre of cornea. Around the end of this line there developed an interstitial infiltration which in spite of heat, quinine, cod-liver oil, and Fowler's solution bids fair to leave a central opacity similar to that in the left eye, though not nearly so large nor dense.

Now while the bromide may have nothing to do with the trouble, the possibility cannot be denied, and the boy's father, one of the leading physicians here, is in the unfortunate position of wanting to give bromides to control the epilepsy, yet fearing to do so lest the eye-sight be further injured. Any experience bearing on the case would be gratefully received by him and the writer.

1404 Farnam St.

H. GIFFORD,
Omaha, Neb.

SOCIETY PROCEEDINGS.

AMERICAN OPHTHALMOLOGICAL SOCIETY.

Twenty-sixth annual meeting held at Hotel Katerskill, Catskill Mountains, July 16 and 17, 1890.

WEDNESDAY MORNING.

The society was called to order by the president, Dr. Hasket Derby, of Boston.

The first paper was that of Dr. W. F. Norris, of Philadelphia, reporting two cases of

BRAIN TUMOR WITH INTERESTING EYE-SYMPTOMS.

CASE I.—Mrs. X., æt. 32 years, a strong vigorous woman, was seen in June, 1889. During last few months there had been failing eyesight. No double vision. Movements of lid and ocular muscles good. Right pupil responded promptly to light. The left was slower in its response, and was larger than the right. The ophthalmoscope showed a low grade of hypermetropia and hypermetropic astigmatism. Discs normal. The field of vision in left eye was defective in upper outer quadrant. In the right eye the defect was in the upper and inner quadrant, but not so marked.

April 4 she had a slight convulsion. She began to have pain referred to the right side of the head and eye. May 6, right optic disc began to be hazy and slightly prominent. Left disc also swollen. Both pupils sluggish. Twitching of muscles of shoulder. Increased headache. Nausea without vom-

iting. Diplopia was first noted May 18. She was seen by Drs. Wm. Osler and S. Weir Mitchell in consultation, and diagnosis of a tumor of the base, probably near the optic thalamus, was made. June 3, there was a convulsion, followed by nystagmus. Death occurred July 5. The diagnosis was confirmed by the autopsy. Microscopical examination showed the characteristic appearance of glioma.

CASE II.—Mrs. Y. was seen in January, 1889. She had lost the sight of one eye, and was rapidly losing that of the other. A year previously she was seized with deafness in the right ear, six months later she had an attack of severe pain in the right trigeminus. Later there was double vision and gradual failure of sight. The right eye was slightly prominent, the pupil semi-dilated and irresponsive to light. There was paralysis of the external rectus muscle. There was in the right eye a dense grayish haze of the retina, most marked about the nerve. The disc was slightly in advance of the retinal level. In the left eye vision was diminished and there was a semi-transparent haze in front of the disk. There was loss of smell in the right side of the nose, and the skin and mucous membrane on this side was less resistant than on the other. There was absolute deafness on the right side. Six days after this observation vision in the left eye was entirely lost. The patient then returned to her home. There was increased suffering from headache and intense neuralgia in the superior and inferior dental nerves, especially on the right side. A few days before death the right eye became so prominent that the lids could not close over it. June 10, the patient became comatose and died.

The autopsy showed a large firm tumor occupying the sella turcica, extending on each side along the wings of the sphenoid, especially on the right side, and also toward the base of the skull. The growth was a carcinoma and involved the second, third, fourth, fifth, sixth, seventh and eighth nerves on the right side, and the second and third on the left side.

Dr. Charles A. Oliver, Philadelphia, gave the history of a case of

INTRACRANIAL NEOPLASM WITH LOCALIZING EYE SYMPTOMS;
POSITION OF TUMOR VERIFIED AT AUTOPSY.

The patient, a male adult, presented general symptoms of right hemiplegia and right hemianæsthesia. When first seen by the writer there was right lateral homonymous hemianopsia, the left field of vision being smaller, with well marked Wernicke hemiopic pupillary reaction sign. In the remaining field there were floating, scotomata for green, more pronounced on the left side, with slight subnormal color perception, also more marked in left field. In the right fundus there was a broad, superficial blotch-like hæmorrhage, extending over the lower outer quadrant of the disc, with enlargement and tortuosity of both the retinal veins and the arteries of the same side.

This grouping of symptoms led to a diagnosis of a gross intra-cranial lesion near or in the left optic thalamus. Autopsy four weeks later showed a glio-sarcoma involving the external portion of the left optic thalamus, as well as the corpus striatum, almost as far as its anterior third. The left optic tract, as far forward as the optic chiasm, was markedly flattened and pressed upon.

Dr. G. C. Harlan, Philadelphia, read a paper on

TRANSIENT AMBLYOPIA WITH BI-TEMPORAL HEMIANOPSIA IN A
CASE OF MALARIAL CACHEXIA.

A sailor, æt. 22 years, was admitted to the hospital September 2, 1889, with severe chills and fever. During the following month he exhibited varied nervous symptoms, headache, mania, hallucinations, etc. Quinine was given without any effect, with the exception of preventing a recurrence of the chills.

November 14, there was diminution of sight, and the patient could see only in front. Vision existed only in the nasal fields. November 18, patient was entirely blind. The next day there was some return of vision. Microscopic examina-

tion showed pigmented corpuscles in great number. Quinine, 24 grains daily, caused rapid improvement. Vision rapidly returned, and on the 24th was normal. By the 30th, the pigmented corpuscles had disappeared. There was no return of the symptoms.

Dr. C. S. Bull, New York, read a paper on

THE EXTRACTION OF DISLOCATED LENSES FROM THE EYE,
WHETHER TRANSPARENT OR CATARACTOUS.

The author maintained that in the majority of cases it was possible to extract a lens, dislocated into the vitreous, by external manipulation, without the introduction of any instrument into the eye. The manipulation may be described as follows: The lids are held open by a wire speculum, and the section made upward with a narrow knife. The speculum is then removed, and the upper lid lifted away from the ball with a wire elevator. Pressure is then made against the lower part of the eye-ball, the pressure being made directly backward; the lens will be seen to rise and appear at the pupil. Sometimes it comes through the pupil, but occasionally the use of a blunt hook or wire spoon becomes necessary. If continued pressure fails to push the lens through the pupil or occasions prolapse of the vitreous, some other method must be substituted. For a number of years he had not found it necessary to introduce a spoon into the vitreous chamber to remove a dislocated lens floating in the vitreous.

Dr. C. S. Bull presented some further considerations on the

SIMPLE OPERATION FOR THE EXTRACTION OF CATARACT.

The paper was based upon some 160 cases of cataract extraction without iridectomy. The method of operation and the complications liable to arise were discussed in detail. The advantages claimed were: (1) If successful without complication, the natural appearance of the eye is preserved. (2) The acuteness of vision is greater than with the older operation.

(3) Eccentric vision is decidedly better. (4) Small particles of the capsule are less likely to be incarcerated in the wound. (5) It is a shorter operation in point of time. (6) As there is no iridectomy, there is little or no hæmorrhage.

The disadvantages are that the technique is more difficult than that of the old operation, the corneal section must be larger; the section must be performed rapidly and there is danger of the iris falling upon the knife; the cleansing of the pupillary space and posterior chamber is more difficult; posterior synechia and incarceration and prolapse of iris is more common. The operation is not applicable to all cases.

Dr. Hasket Derby, of Boston, reported

EIGHT CASES OF DOUBLE ZONULAR CATARACT AMONG TEN MEMBERS OF THE SAME FAMILY.

REMOVAL OF A LARGE EXOSTOSIS OF THE ORBIT WITH PRESERVATION OF THE EYE.

BY DR. T. R. POOLEY, NEW YORK.

The patient was an Irish girl, æt. 23 years, who came under observation Aug. 21, 1888. Two years before she had noticed protrusion of the right eye-ball. At the upper inner angle of the orbit a hard tumor could be felt. A diagnosis of orbital exostosis was made and confirmed by exploratory incision. The patient then disappeared until Feb. 6, 1890, when she returned with pronounced optic neuritis. V.= $\frac{20}{cc}$. Next day there was great pain in and about the orbit with rise of temperature and mild delirium. Exophthalmus was increased and immediate operation urged. The tumor was then removed by the use of the chisel, the mallet not being required. The bony growth measured 39x28x30 mm. and weighed 26 grammes. The patient was discharged at the end of 3 weeks and vision gradually increased to $\frac{20}{XL}$ and all evidence of neuritis disappeared.

OPERATION FOR ECTROPION OF THE LOWER LID BY THE SLID-
ING FLAP METHOD.

BY DR. T. R. POOLEY, NEW YORK.

The object of the communication was to show the adaptability of this operation to the relief of cicatrical contraction. The patient was a woman suffering with ectropion resulting from cicatrical contraction following the removal of epithelioma of the lower lid. The conjunctiva to the cul-de-sac was exposed; a flap was slid from the temporal region to fill the gap in the lower lid. The patient was discharged ten weeks later with a perfect result.

CASE OF A FOREIGN BODY REMAINING IN THE EYE ABOUT
TWENTY YEARS, FOLLOWED BY ABSCESS IN THE
SCLERAL WALL, OPENED AND
RECOVERY.

BY DR. B. L. MILLIKIN, CLENELAND, O.

On March 18, 1871, E. M. O., æt. 10 years, was struck in the right eye by a bit of musket-cap, which he supposed at the time did not enter the eye. Following the injury the eye was greatly inflamed, confining him to his room nearly three months. The eye gave no further trouble and vision was fair until 1883, when he had an attack of severe inflammation in it. The eye again improved with fair vision, and remained well until 1887, when it again became red and painful with failure of sight.

The patient was seen for the first time Feb. 28, 1888. Three or four days before, another attack of inflammation had occurred. The cornea showed a linear opacity. Behind this was a slit in the iris. The ophthalmoscope showed an oblique tract directly through the body of the lens. In the anterior portion of the vitreous was plainly seen a grayish-white body projecting into the vitreous; this had the appearance of an en-

cysted body. Vision in right eye = $\frac{6}{xxxvi}$, in left eye $\frac{6}{vi}$. There was tenderness on pressure over the position of the body.

September, 1889, he had another severe inflammatory attack, but was not seen until November 27. Under active treatment the inflammation subsided.

In December an enlargement appeared over the position of the enlarged body and rapidly increased in size. January 14, the eye-ball was free from any general inflammation, but the projection over the foreign body had increased in size. Under cocaine a needle was passed through the swelling and came in contact with a hard body. A triangular portion of the conjunctiva was then dissected off and an incision made into the swelling. Three or four drops of pus escaped. With a spoon a number of hard, black particles were scraped out. As much as possible of the interior of the sac was removed with the spoon, forceps and scissors. The sclera was at least a centimetre thick at this point. The eye recovered without a bad symptom; the body previously seen in the vitreous chamber had disappeared. By January 22, V. = $\frac{5}{xxx}$. Since the operation there has been no return of the inflammatory attack.

FOREIGN BODY IN THE ORBIT.

BY DR. W. F. NORRIS, PHILADELPHIA.

CASE 1. T. R. came under observation on account of pain in the left forehead and orbit. The eye-ball of that side was wanting. The orbit was filled with a mass sensitive to the touch and at the bottom of the cavity was an opening discharging pus. The probe detected a hard body. He had been struck 18 months before by an exploding railroad torpedo, shattering the left eye, which was enucleated by a surgeon, but the orbit had never healed. The patient was etherized and a large piece of metal which had formed the shell of the torpedo was removed by forceps.

CASE 2. P. B., æt. 47 years, was struck in the eye by a piece of nail which flew from a piece of wood he was sawing

with a circular saw. Some days after the accident he came to the hospital. There was an opening through the lower lid and the sclerotic conjunctiva. A minute black point was seen projecting from the eye which was found to be metallic, and on removal it proved to be a nail $\frac{3}{4}$ of an inch in length.

COMPLETE PARALYSIS OF THE LATERAL MOVEMENTS OF BOTH EYES, ABILITY TO CONVERGE, REMAINING INTACT.

BY DR. B. L. MILLIKIN, CLEVELAND, O.

M. M'L., æt. 33 years, Irish, laborer, presented himself March 21, 1890. Twelve years ago first noticed that he saw things double, but this passed off in a short time. For the past few weeks had been much annoyed by the double images. The patient has been addicted to the excessive use of alcohol, but denies syphilis. In each eye V. = $\frac{6}{15}$. When winking the left eye does not close as rapidly as the right. The eyes follow an object carried up and down in front of them, but in no position of the field can the eyes be seen to move laterally. When the eyes fix an object and this is carried towards the eyes, they are seen to converge so that the object may be carried to within 7 or eight inches of the eyes; pupillary reaction is normal. Each optic disc was small, round, with a narrow choroidal ring, slightly deepened pearly color, and slight degree of H. There were no nervous symptoms and no history of previous illness. Ten grs. of iodide of potassium 3 times daily was ordered, but only a few doses taken. By April 4 the lateral movement of the right eye seemed normal and that of the left eye was improving. The patient then passed from observation.

Dr. Charles E. Rider read a paper on

THE WINKING TEST.

The object of the paper was to point out the relation that exists between the ability to close one eye independently of the other, and the acuteness of vision. The attention of the

writer was directed to this relation by the fact, which he had frequently noted, that such persons as surveyors, sportsmen, and others who use one eye for sighting objects, as a rule, close the poorer eye. Noting this, he was led to make a study of a series of cases, numbering 300. The results obtained were as follows. The term isopia was suggested to indicate those having equal vision in the two eyes, and anisopia to indicate those having unequal vision.

300 cases.		Male.	Female.
Cannot wink,		1	30
Isopia	{ Wink equal,	30	33
	{ Wink unequal,	4	27
Anisopia	{ Wink equal,	17	12
	{ Wink {	4	12
		{ Better eye,	
	{ Poorer eye,	64	66
		<hr/>	<hr/>
		120	180

Of anisopic males who wink unequally, 94 wink the poorer eye, and of females 84 wink the poorer eye.

The practical applications of this test were referred to, and its availability in certain medico-legal cases mentioned.

Dr. J. N. Lippincott, of Pittsburg, read a paper on

NEW TESTS FOR BINOCULAR VISION.

The tests suggested are the outcome of some observations and experiments, the result of which were published in *Knapp's Archives* for March, 1889, under the title of "Binocular Metamorphosis Produced by Correcting Glasses." In practice, a convex cylindrical lens of 2 or 2.5 dioptries, axis vertical, is held before one eye, and the patient is asked which side of a card, ten or twelve inches square, held at the reading distance, appears the higher. The question is repeated with the axis of the cylinder horizontal. Then a concave cylinder is substituted for the convex cylinder, etc. The principal advantages which may be claimed for these tests, which are, in fact, stereoscopic tests without a stereoscope, is their variety and

simplicity, and, moreover, the patient can be more closely watched when under observation, than if his eyes are hid behind the pieces of the stereoscope.

Dr. B. Alexander Randall read a paper on

CAN HYPERMETROPIA BE HEALTHFULLY OUTGROWN?

The writer claimed that the investigations showing the predominance of hypermetropia and the rarity of emmetropia had not been properly accepted. The assumption of the prevalence of emmetropia has little basis, and the claim that the hypermetropia which preponderates in infancy is really less in childhood, and has passed away at maturity, is in conflict with the best attested facts. Even the decrease of the grade of defect from infancy onward is slight, if indeed actual. He cited the results of all the investigations, giving data as to the relation of age to refraction. These showed a very slight decrease in the grade of hypermetropia, a decrease which is really surprisingly small in view of the large amount of pathological tendency towards myopia which has been observed. The author therefore held that all tendency toward emmetropia and myopia was pathological, not physiological.

Dr. Henry D. Noyes, New York, read a paper on

TREATMENT OF MUSCULAR ASTHENOPIA, AND ITS RESULTS.

The paper was a statistical one from which certain deductions were drawn. It was based upon a study of 100 consecutive cases of muscular asthenopia, in which prisms were employed. The cases had all been under observation sufficiently long to render the results worthy of study. Coexisting errors of refraction were found in certain cases but the influence of such errors in the causation of the symptoms was excluded. Among the cases reported there were 60 males and 40 females. The occupation of three-fourths of the cases was such as to demand persistent eye strain. The majority of the patients were in good health, less than 40% being in a feeble condition.

The symptoms noted were ocular and general. Among the former were pain, blurring and unsteadiness of print, inability to look at moving objects, inability to look fixedly at any object, difficulty from seeing the nose, photopsia, unsteadiness of the globe, spasm of the accommodation, and conjunctivitis. Among the general symptoms found were headache which often presented the singular feature of occurring on first waking and increasing during the day, vertigo, nausea, insomnia, melancholia, pain in remote parts, tenderness over the orbital nerve and nasal catarrh.

A study of refraction showed emmetropia in 47, hypermetropia in 25, myopia in none, astigmatism 27, hypermetropic astigmatism 21, myopic astigmatism 4, mixed astigmatism 2, and anisometropia 1.

The muscles affected were as follows: Weakness of the externi, 92; weakness of the interni, 4; general weakness of all the muscles, 1. In five cases there was in addition a vertical error. It is to be observed that the proportion of cases of weakness of the externi is not so great as would seem from this report. The proportion is probably about 75 %.

In the treatment of these cases attention was first paid to the indications presented by the condition of the general health. Many patients had been subjected to general and local treatment without relief. In some cases the use of prisms was at first tentative. In more than half the cases headache was a prominent symptom. It was in most instances relieved by the use of prisms, in some it was lessened and in a few it was not benefited at all. In the larger number of cases, prisms were worn constantly. The final results were, complete relief in 74 cases, moderate relief in 5, no relief in 13, temporary relief in 6.

THE REPORT OF THE COMMITTEE ON BLINDNESS.

was then called for and read by the Chairman, Dr. Lucien Howe of Buffalo.

The study made by the committee showed that about 20%,

of the cases of blindness were due to ophthalmia neonatorum and purulent ophthalmia and suggested certain means of prevention in the way of legal enactments.

Dr. L. Howe also read a paper on

LEGISLATION FOR THE PREVENTION OF BLINDNESS.

As nearly one-fifth of all the blind in the various asylums are there because of ophthalmia neonatorum and as nearly all these cases could be cured if seen in the very first stages of the disease, therefore the writer urged the necessity of requiring nurses to report promptly every such case to some proper medical officer. In other countries stringent regulations have been adopted in this respect concerning the duty of midwives and it was deemed in every way desirable to obtain as far as possible here also the enactment of laws similar to that recently passed by the legislature of New York. This is as follows:

Sec. 1. Should any midwife or nurse having charge of an infant in this State notice that one or both eyes of such infant are inflamed or reddened at any time within two weeks after its birth, it shall be the duty of such midwife or nurse so having charge of such infant to report the fact in writing within six hours to the health officer or some legally qualified practitioner of medicine of the city, town or district in which the parents of the infant reside.

Section II. Any failure to comply with the provisions of this act shall be punishable by a fine not to exceed \$100.00, or imprisonment not to exceed six months or both.

Section III. This act shall take effect on the first of September, 1890.

Dr. J. A. Andrews of New York, read a paper entitled

PURULENT OPHTHALMIA.

It has been claimed that the gonococcus was the cause of gonorrhœa and that purulent ophthalmia was due to the same

cause. The writer has made a number of examinations to see if the gonococcus were always present in these two affections, he had found the gonococcus in all cases of acute urethral gonorrhœa. In 144 cases of chronic urethral gonorrhœa, he had found it in 108 cases. In the purulent ophthalmia of adults, the gonococcus was found in all cases. In the purulent ophthalmia of infants between the ages of two and three months it was found in 3 cases out of 9 examined. This makes 364 cases examined with the discovery of the gonococcus in 322. In nearly all cases the staphylococcus pyogenes aureus was also present.

In the treatment of purulent ophthalmia the uninterrupted application of cold, washing with a saturated solution of boric acid and the use of a solution of nitrate of silver not exceeding 2% was urged. The solution of silver is to be applied once or oftener during the day according to the indications. If the discharge is not profuse, once a day is sufficient. If the discharge and swelling increase, the application may be made more frequently. Nitrate of silver is not well borne when there is little inflammation. The writer has found experimentally that a 2% solution of nitrate of silver destroyed the infective properties of the pus in from six to ten seconds.

Dr. Andrews also exhibited a drawing of

CYSTLIKE BODIES OF THE CONJUNCTIVA.

These occurred in a child five years of age, whose mother and brother had trachiomia. The child itself had no affection of the cornea or trouble with the eye. The microscope showed that they consisted of unpertropied conjuncsival tissue.

Chas. W. Kollock, Charleston, read a paper entitled

A FORM OF XEROSIS.

The author described a form of disease commonly seen among weak scrofulous colored children which differed from xerosis as commonly seen in that the conjunctiva is never con-

tracted, the cornea although more or less affected is never destroyed and under proper treatment recovery takes place.

Dr. Kollock also reported

TWO CASES OF GLAUCOMA, PRESENTING CERTAIN INTERESTING FEATURES.

In one case, æt. 50 years, iridectomy was performed, but the operation was followed by increased tension lasting two days. A four grain solution of eserine was then instilled every half hour. Under this the tension rapidly fell to normal.

Dr. W. F. Mittendorf, of New York, reported a case of

EMBOLISM OF THE UPPER BRANCH OF THE RETINAL ARTERY WITH NORMAL VISION.

In which, owing to the peculiar anatomical arrangement the macula lutea was supplied by the lower branch of the retinal artery. In the lower part of the field vision was absent, but in the remaining parts of the field it was normal. The treatment consisted of pressure, massage and digitalis. Vision is now returning in the lower portion of the field.

A CASE OF RECURRENT IRIDO-CHOROIDO-RETINITIS.

By DR. SAMUEL THEOBALD, BALTIMORE.

Ida R., æt. 25 years, was seen July 8, 1889. Her general condition was fairly good. There was no evidence of congenital or acquired syphilis. She was suffering from recurrent attacks of inflammation in the left eye, which she said had begun two years before and had destroyed the sight of that eye six weeks before coming to the hospital. The eye had evidently been the seat of severe irido-choroido-retinitis. The right eye showed no signs of disease. Enucleation of the left eye was strongly urged. This was declined. She was put on small doses of iodide of potassium with instillation of atropin to the affected eye. Dec. 6 she again came to the hospital,

having had an attack of inflammation in the right eye three weeks before. The eye was somewhat improved $V.=^{15}/_{LXX}$. The left eye was at once enucleated and atropin applied to the right eye. The next day the ophthalmoscope showed that in the right eye there had been a mild attack of iritis and slight inflammatory changes could be seen in the retina. Iodide of potassium and biniodide of mercury were ordered and the eye slowly improved. Dec. 23, $V.=^{15}/_{L}$. Jan. 3, 1890, another attack of inflammation suddenly appeared without cause, $V.=^7/_{CC}$. The iodide was increased to five grains every three hours and a large blister applied to the nape of the neck. Jan. 8, vision had improved to $^{15}/_{CC}$, but there was evidence of commencing iritis. The iodide was now substituted by hydrarg. biniodide gr. $^{1}/_{16}$ three times a day and application of atropia to the eye. The eye steadily improved and by Jan. 28 $V.=^{15}/_{XLV}$. Feb. 11, the inflammation recurred. By March 10 this attack had been recovered from. Another relapse occurred March 28. As the attacks seemed to recur with a certain degree of regularity, quinia was tried. Under this there was improvement. May 28 there was a most severe attack. June 13, tension for the first time was found about normal; the condition of the eye steadily grew worse, and June 24 iridectomy was decided upon as a last resort. It was found impossible to grasp the iris with forceps, and as a result the intended iridectomy was converted into a simple sclerotomy. The effect of the operation was most satisfactory. July 7 she left hospital suffering no pain, but the vitreous was as cloudy as before, and it was impossible to determine that there was even light perception.

Syphilis could be almost certainly excluded in this case. The most probable explanation is that the inflammation was through the medium of the sympathetic or trophic nerves and was dependent upon pathological changes in the ganglionic changes which have to do with the nutrition of the eye.

A CONTRIBUTION TO OCULAR TUMORS.

BY DR. W. H. CARMALT, NEW HAVEN.

Four cases of ocular tumors were reported, two of sarcoma of the conjunctiva and two of glioma. One of the latter was a case of double glioma in an infant, æt. 1½ years. Both eyes were enucleated and so far there has been no return, a period of one year.

In the second case the condition was not diagnosed, as the lens was cataractous and nothing could be seen. Later on there was great pain and the eye became disorganized and was removed. A year later the child again appeared with the orbit filled with a neoplasm. The condition was then recognized, the growth was thoroughly removed and the parts cauterized with chloride of zinc. Five months later, just as healing was about completed, indications of cerebral trouble appeared, and in about ten days the child died. At the autopsy a tumor was found occupying the anterior portion of the brain; a second growth was found in the cerebellum on the right side.

Dr. R. J. McKay, Wilmington, Del., reported

A CASE OF ORBITAL CELLULITIS.

PROGRESSIVE ASTIGMATISM,

BY DR. EDWARD JACKSON, PHILADELPHIA.

The author reported seventeen cases in which the increase of astigmatism in hyperopic eyes had made needful a change of the correcting lenses. Such an increase seems to occur in about two per-cent of all cases. It may be due to chronic congestion of the eye from eye strain, resembling progressive myopia, or to a congenital tendency of the eye to develop thus asymmetrically. The latter mode of origin was pointed to by the blood relationship of several similar cases. Bearing these cases in mind, the surgeon could not promise that the astigmatism of an eye would remain constant, or assume that

a colleague had been mistaken simply because lenses previously ordered by him did not suit the case.

THREE NOTEWORTHY CASES OF AMETROPIA.

BY DR. SAMUEL THEOBALD, BALTIMORE.

The noteworthy feature in these three cases was the existence in each of so much better near vision than the age and refractive condition of the patient appeared to warrant. In two of them (cases 1 and 3) it seemed as though the lids were used (as they can be by narrowing the palpebral aperture and altering the corneal curve) to render the retinal images more distinct. In one case (case 2) it was noted that the pupils were exceedingly small. In case 3 it is noted that the pupils were not unusually small.

The detailed histories of the three cases were then given:

CASE 1.—Male, æt. 50 years, suffering with asthenopia, headache, etc. Had never worn glasses for distant vision, but for near vision he used $+1_{30}$ s. With this he read Jouger 1 at 8 inches. The ciliary muscle was active. It was found that in the right eye there was $H.1_{9}$ and in the left $H.1_{9}$ with $As.1_{72}$. With this corrective vision which without glasses was only $20_{c}^{1} (?)$ was brought up to 20_{xx}^{1} .

CASE 2.—Dr. T., æt. 59 years, suffered with asthenopia and hyperæmia of lids and conjunctiva. The pupils were exceptionally small. For near vision he used $+1_{18}$ s, reading J. No. 1 with the left eye and J. No. 2 with right eye. He was found to have in the right eye $H.1_{16}$ ($V.=20_{xx}^{1}+$) and in the left eye $H.1_{20}$ ($V.=20_{xxx}^{1}$). For near vision the best results were obtained with $+1_{9}$ s for right eye and $+1_{10}$ s for left eye.

CASE 3.—Mrs. R., æt. 54 years, never wore glasses, but had been able to read the small type of a newspaper. Her manifest error of refraction as corrected was R.E.+6.D. cyl. ax. 70° . L.E.+4.25D. cyl. ax. 110° and in near vision the addition of 1.50D. spher. to these cylinders gave the most satisfactory effect.

AN ANALYSIS OF THE OCULAR SYMPTOMS FOUND IN THE THIRD
STAGE OF GENERAL PARALYSIS OF THE INSANE.

Dr. Charles A. Oliver, of Philadelphia, read a paper on this subject.

In an analysis of some of the ocular symptoms in this disease, the author after making thirty-three special observations of the motor, sensory and purely local conditions, arrives at the following summary and conclusions:

1. The oculo-motor symptoms of the third stage of general paralysis of the insane, which consist in varying though marked degrees of loss and enfeeblement of response to light-stimulus, accommodative effort and converging power: lessening of ciliary muscle tone and action, weakening and insufficiency of the extra-ocular muscle motion, all show parietic and paralytic disturbances connected with the oculo-motor apparatus itself. All of greater amount and of more serious consequences than those seen in the same apparatus during the second stage of the disease.

2. The sensory changes of the third stage of general paralysis of the insane which though similar to those found in the second stage of the disorder are so pronounced as to show a semi-atrophic condition of the optic nerve head and a marked reduction in amount of both nerve and retinal circulations with consequent livening of centric and eccentric vision for both form and color. All indicate a degenerate condition of the sensory position of the ocular apparatus with impairment of sensory nerve action.

- 3 The peculiar local changes seen in these cases, which consist in conditions of the choroid and retina indicative of more pronounced local disturbances and irritation of these tunics than those found in the second stage of the disease, all represent the result of greater wear and tear given to a more delicate and more greatly weakened organ.

4. Both the motor symptoms and the sensory changes as thus described in the advanced or third stage of general paralysis of the insane furnish not only evidence of local disturbance

of a more pronounced type than those found in the second stage of the disorder, but plainly show themselves as some of the many peripheral expressions of fast approaching degeneration and dissolution of nerve elements; most probably connected with related cortex disintegration and death.

Dr. John Green of St. Louis read a paper entitled

AN ELEMENTARY DISCUSSION OF SOME CASES OF TIPPED SPECTACLE GLASSES.

A NEW OPERATION FOR SYMBLEPHARON

was described by Dr. George C. Harlan, Philadelphia.

In this case the lower portion of the lid was adherent to the eye ball as the result of the inflammation following an injury from molten metal. The lid was first dissected from the eye ball and the skin cut through except at the attachment at each end. A flap of skin of sufficient size was then dissected below and turned up so that the fresh surface was applied to the lid and the skin surface took the place of the conjunctiva. The result had been very satisfactory.

Dr. S.D. Risley and B. Alex. Randall, of Philadelphia, read a paper entitled

CYST OF THE IRIS FOLLOWING A PENETRATING WOUND AT THE CORNEAL MARGIN WHICH CAUSED SYMPATHETIC NEURO-RETINITIS.

A boy, æt. 10 years, was struck on Dec. 12, 1882, by an air gun dart in the left eye which penetrated to the lens and its withdrawal was followed by prolapse of the iris. This being irreducible was drawn out and excised and healing resulted with a slightly cystoid scar. The right eye had been weak and watering and on Jan. 22 showed distinct neuro-retinitis and the vision quickly fell from $\frac{20}{xxv}$ to $\frac{20}{xl}$. Under alternatives and atropine he improved until with +2 vision equalled $\frac{20}{xxx}+$ on March 17 and $\frac{20}{xx}$ on April 18. Two months later there was a sudden attack of blindness with an epileptoid seizure. A year later vision with the right eye was $\frac{20}{xx}$ and with the left fingers at two feet. In March, 1890, he re-

turned with the left eye red and watery and with a cyst of the lower part of the iris. Vision nil, tension slightly diminished. Enucleation was advised. After a delay of two months, during which time the cyst increased in size and vision declined in the right, the eye was enucleated. The microscopic examination has not yet been completed, but there is no sarcoma in the vitreous chamber.

Dr. O. F. Wadsworth, Boston, read a paper entitled

THROMBOSIS OF THE ARTERIA CENTRALIS; CENTRAL VISION UNAFFECTED.

A young woman, æt. 24 years, had diminution of vision in the left eye. The field was much contracted but central vision was unaffected. Examination showed plugging of the central artery. The circulation on the macular region was however maintained by an anomalous vessel, a retino-ciliary artery.

Dr F. M. Wilson, of Bridgeport, Conn., presented three specimens of *filaria oculi humani*.

Dr. George C. Harlan reported a case of temporary pulsation of the retinal arteries following the application of homatropine.

Dr. Harlan also exhibited a modification of the Noyes ophthalmoscope.

Dr. B. Alex. Randall moved that the society express its approval of the method of nomenclature of prisms suggested by Dr. R. S. Bennett. This was adopted. The following officers were elected: President, Dr. Hasket Derby, New York; Vice-President, Dr. G. C. Harlan, Philadelphia; Secretary and Treasurer, Dr. S. B. St. John, Hartford, Conn.; Corresponding Secretary, Dr. J. S. Prout, Brooklyn.

The following were elected to membership: Drs. A. E. Ewing, St. Louis, Mo.; Neil J. Repburn, New York; Chas. M. Culver, Albany, N. Y.; Richmond Lenox, Brooklyn; Frank B. Ringe, New York.

The Society then adjourned to meet with the Congress of American Physicians and Surgeons, September, 1891.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Regular meeting, Thursday, May 1, 1890, J. Hughlings Jackson, M.D., F.R.S., President, in the Chair.

Corneal Tumor (Fibroma?) in a man, æt, 72 years. Dr. Benson (Dublin) read notes of this case. The tumor was attached to the upper portion of the left cornea of a blind glaucomatous eye. It measured 5 millimetres in its longest diameter, 2 millimetres in thickness. It was adherent to the surface of the cornea above the centre by 2 or 3 millimetres of its thin edge. The eye was said to have been blind for many years, but a few days before the patient came under observation he had knocked it against something, and since the blow had suffered intense pain. There was no evidence of recent injury to the eye. The growth was dissected off the cornea, and was found to consist of fibrous tissue with bloodvessels and cells, the whole being covered with epithelium, except at the margin, where it had been separated from the cornea. It had a dull, lustreless, grey color, and was lenticular in shape. The writer mentioned the great rarity of corneal tumors of any kind, and expressed his inability to account for the existence of the growth in his case. A model and microscopic sections and photographs were shown.

Optic Nerve Atrophy in Smokers.—Mr. Lawford read a paper based upon nine cases of optic nerve atrophy in which the symptoms in the early stage so closely resembled those of toxic amblyopia that the diagnosis made at first was that of tobacco blindness. All the patients were men and smokers, usually consuming a large quantity of tobacco. Treatment by abstinence from tobacco and the administration of nervine tonics led to no improvement; indeed, in most of the cases, sight became progressively worse. The general features presented by these cases were gradual failure of vision, with central negative scotomata for form and color. The ophthalmoscopic signs were slight pallor of the temporal half of the discs, without visible alteration in the retinal vessels. The chief dis-

inction between these cases and those of ordinary tobacco amblyopia was found in the peripheral limitation of fields of vision, which was almost always discovered if sought for; whereas in tobacco cases the boundaries of the fields were in most, if not in all, instances normal. None of the patients under the writer's observation had symptoms of spinal disease, but one man, æt. 51 years, became insane some months after his sight failed. He was of opinion that tobacco was certainly a factor in the causation of the optic nerve disease.

MR. ADAMS FROST said he was familiar with cases similar to those just described. He looked upon them as cases of tobacco neuritis in which secondary atrophy supervened. He had long been of opinion that if vision deteriorated beyond a certain point in tobacco amblyopia, recovery did not take place, and in such instances he was accustomed to give an unfavorable prognosis.

MR. EDGAR BROWNE (Liverpool) thought that the cases cited were undoubtedly instances of tobacco poisoning. They occurred in persons of unstable nervous constitution, not displayed otherwise than in the behavior of the optic nerves; the instance of three brothers quoted as being affected in a similar way bore out this impression. Many cases showing no contraction of fields recovered; on the other hand, those in which the disease was severe and of long standing, and in which the fields were limited, did not recover. He had recently under his own care two brothers, smokers, who both suffered from amblyopia; in one the disease progressed and the field of vision became contracted; in the other improvement occurred. He was not aware of any instances of similar optic nerve disease in non-smokers.

DR. HILL GRIFFITH said that he was familiar with cases like those described by Mr. Lawford. He did not look upon them as cases of tobacco neuritis, for he held that disease of optic nerves from tobacco was always followed by recovery on discontinuing the drug. He thought some such cases might be explained by the coincidence of progressive atrophy of optic nerves and tobacco amblyopia, as in one case he had in a patient with locomotor ataxy.

MR. DOYNE (Oxford) said that he had found that cases of tobacco amblyopia which were likely to improve always experienced great temporary improvement in sight from the inhalation of nitrite of amyl. He thought the use of strong tobacco interfered decidedly with nutrition and assimilation of food by its action upon the digestive tract. Many cases of tobacco amblyopia had loss of appetite.

DR. BRONNER (Bradford) spoke of the similarity in the effect of alcohol and tobacco on the optic nerves, and of the gaps which still existed in our knowledge concerning toxic amblyopia. He was accustomed to stop the use of tobacco in all cases of optic nerve atrophy.

MR. LAWFORD briefly replied.

The Artificial Maturation of Immature Senile Cataract by Trituration.—Mr. M. McHardy read this paper, in which he said that full five years' experience with the artificial ripening of immature senile cataracts, practiced with increasing frequency and confidence, had convinced him of the truth of the following proposition: Complete ripening of immature senile cataracts may be safely and almost certainly secured in from eight days to eight weeks by preliminary iridectomy, with trituration of the lens through the cornea and pupil, done with judgment, experience, and care; the ultimate results (surgical and visual) of extraction operations in such cases are quite equal to the results of similar operations for senile cataracts, which have been allowed to fully mature spontaneously; and, further, the removal of such artificially-matured cataracts is entirely free from those risks, drawbacks, and often impaired ultimate results, which follow from the removal of immature senile cataracts. He thought that a large debt was due to Færster for the initiation of this procedure. By memoranda from his first 25 and last 100 cases the author furnished details regarding his past experience with and present practice of the procedure, and emphasized thereby how its safety and success grew with the operator's experience.—*Brit. Med. Jour.*

SELECTIONS FROM AMERICAN MEDICAL JOURNALS.

A SIMPLE AND QUICK METHOD OF DETECTING ASTIGMATISM.¹

BY F. C. HOTZ, M.D.,

Professor of Ophthalmology in Chicago Polyclinic; Attending Surgeon to Illinois Charitable Eye and Ear Infirmary, Chicago.

It is an old saying that "haste makes waste;"¹ and every medical man will do well to have these three words inscribed in golden letters over his desk; for three-fourths of all the mistakes made in medical practice can be traced to hasty examination. But while we should spare no time in order to obtain a correct diagnosis, we do not like, on the other hand, to waste any time unnecessarily in the busy hours of the consulting room. While our examination should never be hurried, it often can be quick or slow, short or long, the time consumed being dependent a great deal on the method we employ; the one method may give us the desired information in five minutes, which we cannot get by another method in less than fifteen minutes.

In this respect the examination for astigmatism furnishes us a good illustration, and if we make quickness and precision the essential conditions for the best practical test for astigmatism, the methods at our disposal show a great difference in their practical utility.

¹ Read before the Section of Ophthalmology, at the Nashville meeting of the Am. Med. Association, May 20, 1890.

When we examine for astigmatism, we wish to find out first, of course, whether the eye is astigmatic; and if it is, we want to know the exact position of the two principal meridians. If this point is established with precision, it is an easy task to ascertain the refraction of either meridian, and thereby the degree of astigmatism, and to select the proper glasses.

Now, we can diognosticate astigmatism by the direct ophthalmoscopic examination, but you will admit this is not a quick and easy way. Much quicker and easier is the shadow test; but neither method can determine with precision the direction of the principal meridians.

We may often succeed in detecting astigmatism very quickly by rotating a cylinder glass before the eye, but just as often our patients' answers are so vague and misleading that a great deal of time is consumed before we are reasonably certain whether astigmatism exists, and where the meridians are located.

And as to the so-called astigmatic fan or clock and all its modifications, this test demands a degree of accurate observation the fewest of our patients possess. Especially with children (and they constitute no small proportion of our cases) this test is very tedious and unsatisfactory; but even grown persons seldom are quick in observing any marked difference in the lines unless their astigmatism is of a high degree. I have often tested patients upon this point, after their astigmatism had been established by other means, and the most of them could not see any difference in the lines until I pointed out those lines which, according to their astigmatism had to be the most distinct, and told them to compare them with those lines which had to be the least distinct; then, and not until then, they began to appreciate the differences. But in the examination, of course, it would never do to lead the patients in this way, because if you ask them whether they do not see certain lines more distinctly than others, nine out of ten will imagine to observe a difference which they do not see, and make you diognosticate an astigmatism which does not exist.

Dr. Culbertson's prisoptometer is a very ingenious instru-

ment to detect anomalous refraction; but it, too, puts a greater demand upon the observing power than a great many patients can meet. I, at least, have found that it is impossible for many patients to appreciate slight variations in the contact of the two discs, so that they could tell with precision whether the contact remains exactly the same during the rotation, or at which angle of rotation it is disturbed the least and at which the most.

It would be tiresome to review all the methods and costly instruments which have been devised for the examination of astigmatism; they are no better than those I have mentioned. These, I believe, are the most popular methods, and I have shown that none of them fulfils our conditions of quickness and precision in establishing the presence of astigmatism and the direction of the principal meridians; especially for the lower grades of astigmatism they are not very reliable.

Now, Mr. President, it has always seemed so strange to me, that we should waste our time with these elaborate methods when we have a much simpler and more sensitive test which will tell us quickly whether an eye is astigmatic, and at the same time, also, give us the correct position of the faulty meridians. This test is the retinal image of a distant point of light.

Since the rays coming from such a point, which pass through the meridian of greatest refraction, are focussed sooner than the rays which pass through the meridian of least refraction, the image upon the retina can never be a sharply defined luminous point. If the retina is at or near the anterior focal line, image will be elongated in the direction of the meridian of least refraction, and if the retina is at or near the posterior focal line, the image is drawn out in the direction corresponding with the meridian of the greatest refraction. Whenever, therefore, a patient sees a distant point of light elongated, we know he is astigmatic, and the line of elongation gives us, at once, the direction of the one, and indirectly, also, that of the other meridian, because they are always at a right angle to each other. And as it does not require a keen power of observa-

tion to tell the approximate shape of a small hole, this test is as quick as it is sensitive and precise; for it is very easy, even for a child, to determine whether the light looks round (like a pea or a marble) or oblong (like an egg, an almond, or half moon) or whether it has no definite form (like a star).

Theoretically, this distant point of light should appear elongated to every astigmatic eye, with the exception of such cases of mixed astigmatism where the myopia of the one meridian is about of the same degree as the hypermetropia of the other principal meridian; for, under these circumstances, the retina, being about in the centre of the focal interval, receives a round, though indistinct, dispersion image.

In persons over 40 or 45 years of age, you will find the results of the test agree with the theory. But among younger persons with active accommodation, you will find a great many who, though astigmatic, see the hole perfectly round, because their astigmatism is corrected by the unequal contraction of the ciliary muscle. I have found, however, that, if such patients look steadily at the light hole, they will observe its form is constantly changing from round to oval, and back to round again. This observation shows how sensitive this test is, and at the same time furnishes us an interesting evidence of the unequal contraction of the ciliary muscle.

But, fortunately, we have in mydriatics the effectual means of eliminating the disturbing influence of the ciliary muscle; and I never consider the examination for astigmatism in a young person completed unless the accommodation has been suspended. When this is done, the light hole will always appear elongated in simple astigmatism, and in all cases of compound astigmatism, provided the refraction of one meridian does not depart from emmetropia by more than $\frac{1}{2}$ or 1 dioptre. With higher degrees of ametropia in both meridians, the retinal image is so blurred that the patient cannot make out any definite shape; but the proper spherical glass (+ or —, as the case may be) which corrects the ametropia of one meridian, and thus reduces the compound to a simple astigmatism, will produce a better defined image, and reveal at once the elonga-

tion of the point. And in the same way we can reduce mixed astigmatism to the simple kind, and obtain the distinct oval image by our test.

Sometimes a patient will see the hole double, instead of

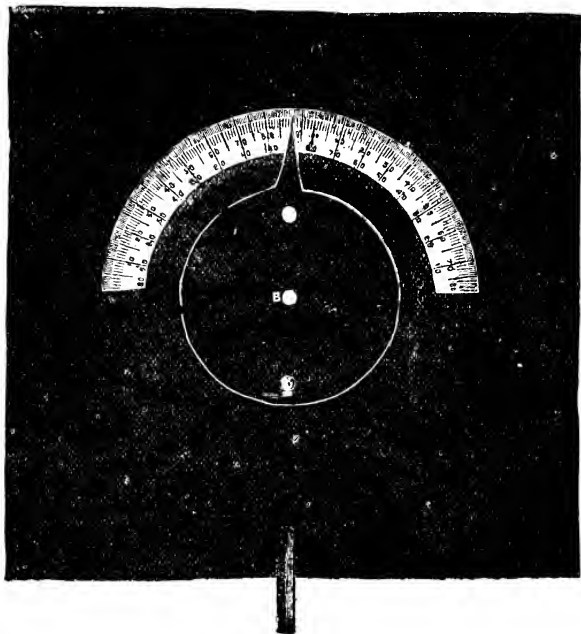


FIG. 14.

oblong; in this case, the position of the secondary hole, above or to the side of the other, defines the directions of the meridian just as well as the vertical or horizontal elongation does.

I began using this test in 1872, when I had a little instrument made for this purpose, which, in want of a better name,

I baptized "astigmometer," although I employ it more for *detecting* than for *measuring* astigmatism; but you can measure its degree with it just as well.

DESCRIPTION OF THE ASTIGMOMETER.¹

The instrument, which I take pleasure in showing you now, consists of a blackened metal screen 20 centimeters (8 inches) square; in its center it has a round aperture (B); and the semicircle of a protractor is fastened to it, so that the 90 degree mark is exactly perpendicular over the round hole, and the 180 degree mark exactly on a horizontal line with it. Between the protractor and the central hole, a semicircular slot, 10 millimetres wide, is cut into the screen, but is covered in front by a round metal disc, which can be rotated round the central opening, and which has, near its periphery, a round hole (A), so arranged that it travels exactly along the slot when the disc is rotated. Just over this second hole (A), the edge of the disc is drawn out to an arrow-like point, which reaches the concave margin of the protractor. This point and the centers of the two holes are exactly in a straight line; and, therefore, the angular degree of the protractor to which the arrow points will always show the radius in which the movable hole (A) is situated. Both holes are exactly of the same size; on the front side they have a diameter of 4 millimeters, but on the other side they are much larger. This was done to make sure that no shadows could interfere with our observations; for the metal around the holes (especially around the central one) is so thick that, if they had the same size on the posterior as on the anterior face, the posterior edge might cast a shadow when the hole is illuminated from behind, and this shadow might make the hole appear to the spectator in a different than its true from though he be not astigmatic. Finally, in order to avoid any glaring light, and to make the outlines sharp and distinct, the holes are filled with small bits of ground glass, so that they light up with a uniform mellow light. Diametri-

¹ For sale by Sharp & Smith, 73 Randolph Street, Chicago.

cally opposite the arrow, there is a small knob, by which the disc can be conveniently rotated if necessary.

How to use the astigmometer: The instrument may be set in a window shutter, or placed in front of a gas or lamp-light. My instrument is set into a movable bracket, which is fastened to the wall, and thus it is out of the way. When I wish to use it, I swing the bracket so that the screen stands exactly perpendicularly, and about 6 or 8 inches in front of the gas-light, which stands just a little higher than the central hole. The screen is so high from the floor that the holes are about on a level with the eyes of a patient, sitting (if an adult) or standing (if a child) 15 feet away. Especial care must be taken that the plane of the screen is exactly at right angles to the visual line of the patient. The room is then darkened, the gas-light turned on just enough to light up the holes, and the patient is directed to look at them, with one eye at a time, and to tell whether he sees them distinctly enough to make out their form. Never ask a leading question like this: "Do you see those round holes?" because the *Suggestion* of the round form implied in the question will make the patient see the holes round, even though they actually appear to him oblong. Let the patient describe what he sees, and you will easily and quickly find out whether the holes appear indistinct, or round, or oblong.

The great advantage of this instrument is, that as soon as, with or without spherical glasses, the holes appear drawn out, we do not only know the eye is astigmatic, but we know also at once the exact direction of the faulty meridians. If the patient declares the elongation is straight up or straight across, we know, of course, the two meridians are vertical and horizontal. But if the elongation occurs in an oblique direction, the patient can seldom estimate accurately the angle of inclination; and just here this apparatus is of the greatest value, for it will determine the inclination quickly and precisely. While the patient is looking at the holes, we only have to turn the round disc to the right or left until the peripheric hole (A) is moved to a point where its long axis (as seen by the patient)

makes one straight line with the long axis of the stationary central hole. The degree to which the arrow then points gives the exact angle of inclination of the meridian. For instance, if the patient sees the holes drawn out obliquely up to the right, I must move the peripheric hole, if it stands at 90° , down to the right, to bring it into the line of inclination. Before doing this, I explain to the patient, by means of two pencils, what I wish to accomplish, and what I mean by "bringing the two ovals into the same line;" when he understands it, and I begin rotating the disc, he is to tell me to stop when the holes are in line. This done, I look at the indicator, it points to 45° , and I know at once the one meridian is inclined 45° , and the other, of course, 135° .

Dr. S. M. Burnett, who, as far as I know, is the first author since Donders giving a description of this test, says:¹ "But while this gives us the direction of the principal meridians, it furnishes no information as to the form of the astigmatism, the light spot being drawn out in the same direction in M and H." This is true, but if you wish to get this information, you can quickly have it by a few trials with spherical glasses. Suppose, for instance, the light holes appear elongated vertically, and a+1D makes them still longer, but at the same time broader and less distinct, while a-1D reverses the elongation and draws the holes out horizontally, you know at once there is myopic astigmatism in the vertical meridian, and if you like, you can determine even the exact degree of the M by that grass, which changes the light spots to a horizontal line.

Whether you like to determine the refraction of the meridians in this way first, and then to find out the visual acuteness by means of glasses and the testtypes, or whether you prefer to determine the refraction and vision in each meridian at one and the same time, with the aid of the stenopaic slit—that is, perhaps, a matter of personal choice. I, for my part, use the stenopaic slit and test-types as soon as the astigmometer has furnished the direction of the meridians; for in this way I can

¹Treatise on Astigmatism, p. 76.

find out the quickest which glasses will give the patient the best possible eyesight.

And this is the practical and final problem our examination for astigmatism has to solve, and which it can solve only by means of the test-types and lenses. All the other methods are useful only in preparing the way for this final test. And among these preliminary tests I regard the distant point of light as the most useful one. It is probably the oldest test for astigmatism; for Prof. Donders, as we all know, has used it extensively in his classical investigations on astigmatism. In 1873 Dr. W. L. Purves spoke of its merits in *Graefe's Archiv* (XIX) and described an instrument very similar to the one which I had made for my own use a year previously. But as I have not seen it used by any one else, and having tested its reliability and practical value these eighteen years, I cannot longer resist the desire to see it more generally employed. And I feel convinced you will find it, as I did, a most useful addition to your office outfit, and a time saving instrument in your practical work.--*The Times & Register*.

PUBLISHER'S NOTICE.

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“ 5, Nos. 1, 4, 5, 6, 7 and 8, Jan., April, May, June, July and August, 1888.

“ 6, No. 1, Jan., 1889.

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No. 9.

OPERATION FOR ECTROPION OF THE LOWER LID BY THE SLIDING FLAP METHOD.¹

BY THOMAS R. POOLEY, M.D., NEW YORK,

Surgeon-in-Chief of the New Amsterdam Eye and Ear Hospital; Professor of Ophthalmology in the New York Polyclinic.

The method of operating by sliding flaps to fill the defects left after the removal of morbid growths is not a new one, but has only of late been much adopted in operating upon the eye-lids, and is now described in all modern books on ophthalmology. The object of this communication is to show the adaptability of this method to the cure of cicatricial ectropion of the lower lid, which, so far as I know, has not hitherto been very generally put in practice.

Mrs. W., æt. 48 years, was admitted to the New Amsterdam Eye and Ear Hospital March 17, 1890, suffering from an ectropion of the lower lid. On Sept. 9, 1889, she was operated on for the removal of an epithelioma of the lower eye-lid, the subsequent healing resulting in ectropion. To relieve this the same surgeon essayed an operation which, however, not only failed, but, as she says, made the ectropion much worse.

¹Read before the American Ophthalmological Society, July 16, 1890.

The condition shown by the patient on her admission was that usually seen in cicatricial ectropion. The lower lid was dragged downward and somewhat outward, the conjunctiva exposed to its *cul de sac*, forming in its extent an equilateral triangle, at the apex of which was situated the most dense cicatricial tissue. The lower canaliculus was pulled about 4.5 mm. from its normal position. The exposed conjunctiva in a state of hyperæmia and hypertrophy, and the eye constantly overflowing with tears, complete closure of the eye was impossible.

I began the operation with the intention of practicing the method known as Wolfe's transplantation of flap without a pedicle, but after the relief of the lid, removal of the cicatricial tissue, and stitching together of the eye-lids, I determined to fill the gap with a sliding flap from the temple instead.

The operation was made as follows: Having slit the lower canaliculus, I introduced a probe and pushed it horizontally into the lachrymal duct, then make a curved incision a little beyond the puckered edge of the cicatrix, dissected it free from the malar bone to which it was adherent, keeping my finger in the conjunctival *cul de sac* to avoid cutting through The cicatricial tissue bands, which proved to be very extensive and to extend up to the inner canthus, were all carefully removed and the whole extent of the gap exposed. I now pared and stitched the eye-lids together by four points of interrupted suture. The large defect left was filled by carrying an upper incision along the cheek over the zygoma, well out upon the temple and toward the ear, and a lower one in the same direction over the cheek, the outer end of the upper incision being directed upward, and the outer end of the lower incision downward, diverging from each other, in such a manner as to secure greater width of the pedicle. The length of the upper incision was 10 cm., and of the lower, 8 cm., 7.5 mm. This flap was then carefully dissected up, only the skin and immediate subcutaneous tissue being included; and, this done, the flap was slid inward over the whole area of raw surface, which it completely filled without any traction,

and united by sutures to the opposite side. After waiting for all bleeding to subside, they were carefully adjusted with points of interrupted sutures of fine black silk, 24 in number. Only a moderate amount of bleeding took place during the operation, and when finished the color of the flap was quite similar to the same area on the opposite side of the face. During the progress of the operation and while stitching the flap, a towel wrung out of hot water was occasionally applied to the surface to maintain its vitality. The patient was allowed to come from under the influence of the ether before all the stitches were applied and bore the operation well. The dressing consisted of iodoform gauze smeared with carbolized vaseline, and a thick layer of absorbent cotton, all of which was held in place by a roller bandage applied in such a way that traction was made on the flap in the direction of its apex. Time of operation, one hour and three-quarters.

The next day the patient had no pain, the pulse and temperature were normal and the dressing was not disturbed. The day following, March 20, the dressing was removed and the wound was found to be entirely united by first intention; no swelling; no evidence of suppuration.

From this time on the healing took place without an untoward symptom of any kind. At no time was there any suppuration, not a drop of pus was discharged.

On March 22, several of the stitches were removed. Union of the upper and lower lid had only taken place in its outer quarter.

The day following all the other stitches were removed, and the apposition of the flap was everywhere perfect, with no tendency to separate, the line of union being everywhere firm.

March 25, bandage was left off and on the 27th the union of the lids severed by the scissors.

The patient was discharged two weeks after her admission with the most gratifying result imaginable. There was complete cure of the ectropion. The margin of the lower lid lay in nice apposition with the eye; closure of the lids was perfect, and it was really surprising how little deformity resulted from

the operation. At a little distance off the scars were hardly noticeable, since they lay in the natural wrinkles of the face. There was slight redundancy of the inner lower part of the flap, numbness and occasional neuralgic pains in it.

It seems to me that when this method is applicable, it is much to be preferred to Wolfe's flap without a pedicle, in which the author himself seems to have had better results than anyone else, nor does it leave in a suitable case more deformity.

The uniting of the free margins of the lids is not necessary, but in my case was included when I had the intention of practicing Wolfe's method, for if properly made the whole traction of the healing will be horizontally in the long axis of the scar and consequently will tend to render the ectropion less.

EXTENSIVE LACERATION OF THE EYE WITH RECOVERY.

BY CHARLES H. MERZ, A.M., M.D., SANDUSKY, O.

The following case is thought worthy of record because of the somewhat unusual character of the injury and subsequent recovery.

On Thursday, May 18, 1890, J.M., æt. 16 years, was brought to my office two hours or more after the right eye had been struck by the steel tine of a pitchfork. While unloading hay, a fork slipped from the top of the load and falling, in some manner, struck the upturned face in an oblique direction. The fork entered the outer margin of the lower eyelid, piercing the sclerotic. The injury was followed by free hæmorrhage, which was controlled by a cotton handkerchief bound over the eye, and the patient was brought eight miles over hot dusty roads to my office.

Upon examination, the eye showed a lacerated wound of the lower lid near the outer commissure, and a wound of like character of the entire lower half of the cornea at its junction with the sclerotic.

The cornea was partly collapsed from the escape of fluid, but the remnant of the anterior chamber was filled with blood; the iris had been torn, and the lower portion was protruding. The entire globe and lid were intensely congested, and there was still a slight hæmorrhage.

The patient complained of severe pain in the eye and surrounding parts.

After carefully washing the eye with a stream of bichloride, 1:5000, an attempt was made to replace the lacerated iris, but this being found impossible, it was gently withdrawn; and the

free portion cut off. There was some doubt as to the use of eserine or atropine, but the latter was employed 4 gr. to 15. The margins of the corneal wound were apposed as carefully as possible, and pledgets of lint, wet in ice water, applied continuously.

After the lapse of 24 hours the eye was found still badly congested and the patient was suffering much pain.

Six leeches were at once applied, and the following solution dropped in the eye every four to six hours: \mathcal{R} Hydrastiae sulph., gr. jss; acidi boracici, gr. iv.; tr. opii deod., $\mathfrak{m}\mathfrak{x}\mathfrak{l}$.; cocaine hydrochlor., gr. ij; aquæ, 5j. These measures had the effect of lessening the pain somewhat, but the congestion was still very marked. The free use of magnesiæ sulphate with mercurial inunctions and occasional leeching brought about a lessening of the congestion and kept the patient comfortable. The room was kept darkened and the ice water compresses continued at intervals for three weeks. Hot water was tried, but was not so comfortable as cold.

At the end of the third week photophobia and lachrymation had almost disappeared, and no pain was complained of.

The hæmorrhagic clot in the anterior chamber gradually changed color, fading to a light yellow. At the end of six weeks there was perception of light, but no more.

Some conjunctival redness remained, but the patient was able to perform light manual labor by protecting the eye with dark smoked glasses.

Under the use of iodide of potassium the clot has been gradually absorbed, and vision is returning.

In this connection I would urge from personal observation in a number of cases that enucleation of an injured eye be delayed more frequently than it is. Sympathetic inflammation is not so often the result of an injury as it is believed to be. At all events, the removal should be deferred for a length of time sufficient to prove the possibility or impossibility of saving the eye.

CASES OF PHLEGMONOUS GANGRENE OF THE LID.

BY HARRY FRIEDENWALD, A.B., M.D.,

Lecturer on Ophthalmology and Otology, College of Physicians and Surgeons,
Baltimore; Late Assistant to Prof. Hirschberg, Berlin.

Cases such as the one I wish to describe are, fortunately, very rare. They will, undoubtedly, become still more infrequent as the antiseptic treatment of fresh wounds, however slight they may be, becomes more widely spread, not in the profession alone but also among laymen; for these gradually learn the practices of medicine and surgery, and take them up in treating their petty ills and injuries. Had the case whose history I shall narrate been promptly and properly treated, the little wound received would probably have healed, scarcely leaving a scar; its neglect resulted in serious illness and lasting deformity.

On May 12, Dr. Wolf called me to see the two and a half year old daughter of Mr. S. The child, who had otherwise been perfectly healthy, had injured itself slightly while playing in the cellar, having "scratched its temple." This occurred on the afternoon of May 10. Nothing had been done for it. On the following day the eyelids began to swell to such an extent as to alarm the parents, who sent for Dr. Wolf the next morning. Regarding it as a very serious injury, perhaps involving the eye, he called on me to take charge of the case. I saw the child on the afternoon of the same day (May 12), and found great inflammatory œdema of the lids of the left eye, the upper lid covering the lower, and a small wound near the outer canthus. The child was very restless and suffering. The temperature was not measured, but there appeared to be slight

fever. On close inspection I noted a few pale spots, as small as a pin's head on the surface of the deeply congested upper eyelid. On raising the lid with an elevator, I found the eyeball normal. In order to relieve the tension on the lid, I made a few incisions. I then ordered hot water applications to be made constantly, and four drops of the tincture of the chloride of iron to be given every three hours.

May 13. Swelling intense, extending even to the right eye. The skin covering the upper lid is necrotic to a large extent, presenting a gray appearance, the gangrenous part is somewhat flattened, sunken, and bounded by a sharp line. The general condition is unchanged.

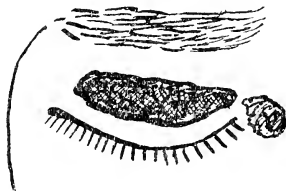


FIG. 15.

May 14. The mother showed me a large slough which had been thrown off. This has left a great open ulcer with deep edges. (See Fig. 15). Its surface is covered with thin gray necrotic tissue, and bleeds easily. The redness and the swelling are reduced. Dressed with iodoform.

May 16. The surface of the ulcer is still to a great extent covered with the necrotic tissue, granulations showing only here and there.

My daily record shows that there was a slow extension of the ulcer so that, on May 17, it reached the ciliary margin of the lid below, and to within $\frac{1}{2}$ cm. of the brow, and from the nasal edge so far to the temporal side as to include the primary wound. (See Fig. 16). At this last

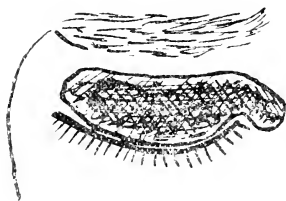


FIG. 16.

mentioned spot it is deepest. There is a great amount of suppuration, but the gray necrotic surface has been cleaned so as to present a granulating wound. From this time the wound began to fill up so that its surface reached the level of the edges, and cicatrization proceeded slowly. During this time I found that no pus escaped from the palpebral fissure, and this assured me that there was no need to examine the eyeball, which, I was confident, was unaffected. It was not before the 26th that I raised the lid, to find the eye perfectly normal, the scleral conjunctiva alone being somewhat reddened. The course of healing was uninterrupted, so that by June 16, when I last saw the patient, it was all but completely cicatrized; at this time a very slight ectropion was beginning to show itself, though the lids could still be brought together

nicely; all swelling had disappeared; nevertheless further contraction of the cicatrix may cause still greater deformity of the lid, in which case it will be necessary to relieve it by operation. (See Fig. 17).

The idea of transplantation recommended in similar cases was entertained during the treatment, but the great amount of suppuration, which could not be controlled, prevented any attempt from being made.

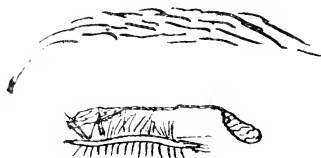


FIG. 17.

I wish to call attention to the *very rapid course of the gangrene*, this occurring within 48 hours after the redness appeared, or 60 hours after the injury had taken place. The case is similar to those very acute and malignant cases of "phlegmonous inflammation," ending in gangrene described by Michel¹, Horner², Fuchs³, Noyes⁴, and others.

¹Graefe and Saemisch, Bd. IV., p. 387.

²Handbuch d. Kinderkrankheiten, 1889. Bd. V., Abth. II., p. 220.

³Lehrb. d. Augenkr., p. 507.

⁴Diseases of the Eye, p. 233.

As remarked by Fuchs (loc. cit.), so also in this case the gangrene did not extend beyond the margin of the lid, or involve the portion bearing the cilia, owing to this portion of the lid being best supplied with blood (from the *arcus tarseus inferior*).

It is advisable to examine the eyeball as rarely as possible, and not to be induced by a pardonable curiosity nor the parental anxiety to raise the lid frequently with instruments. However smooth these instruments may be, they may produce abrasions in the still healthy cornea, and thus give access of the virulent infection to the eyeball.

SOCIETY PROCEEDINGS.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Regular Meeting Friday, July 4, 1890, J. Hughlings Jackson, M.D., F.R.S., President, in the Chair.

CONCUSSION OF THE EYE-BALL GIVING RISE TO ACUTE LOCAL SYMPTOMS OF CONGENITAL SYPHILIS.

Dr. Adolf Bronner (Bradford) recorded three cases in which concussion of the eyeball in patients with a history of congenital syphilis has given rise to interstitial keratitis and peripheral choroiditis.

1. A girl, æt. 14 years, was hit on the left eye with a shuttle at the mill. Interstitial keratitis set in, and seven months afterward the cornea of the right eye became similarly affected.

2. A man, æt. 22 years, was struck on the left eye with a piece of coal. The cornea was steamy the next day, and typical syphilitic interstitial keratitis set in, and in ten days the right cornea was affected. In this case there were brown-black patches of choroidal pigment in the periphery of the fundus.

3. A boy, æt. 9 years, was struck on the left eye with a dart. Three weeks afterward he noticed that he could not see so well with that eye. The cornea and media were clear, but there was a patch of choroidal absorption near the macula and peripheral choroiditis. Dr. Bronner thought that, from a legal and also therapeutic point of view, it was of great importance to know if concussion of the eye-ball could cause a local out-

break of latent congenital syphilis. He thought that this did occur very frequently, but was overlooked.

“CEPHALIC TETANUS” FOLLOWING A PENETRATING WOUND
OF THE ORBIT.

Dr. Rockliffe (Hull) recorded this case. The patient, a boy æt. 7 years, received a slight penetrating wound of the left orbit from a fall. Two small pieces of thorn suppurated out on the seventh day. On the tenth day he complained of stiffness of the left face and neck, which was followed by spasmodic contractions of the left side of the face, complete right, partial left ptosis, with flattening of the left side of the face, and inability to open his mouth. The wound and orbit were explored and thoroughly washed out with perchloride of mercury solution; the spasms, which disappeared under chloroform, continued to increase, and became more general, even to opisthotonos, until the twelfth day, when they began to decrease, and entirely ceased in three weeks. The facial paralysis, ptosis, and inability to open the mouth remained for some weeks afterward. Twelve weeks after the accident the only symptoms were slight drooping of the left lid and diplopia on convergence for near objects, both of which were decreasing.

The President asked if paralysis of the portio dura was at all usual in cases of tetanus. He did not remember to have seen a case.

PYÆMIC PANOPHTHALMITIS.

Dr. Rockliffe read notes of a case occurring in both eyes in a patient æt. 30 years, who miscarried in the sixth month of her fifth pregnancy, and subsequently suffered from septic poisoning. The ocular symptoms commenced on the thirteenth day, and vision was completely lost in forty-eight hours; suppuration of the vitreous and in the orbit followed, with considerable proptosis of both eyes. She also had ischio-

rectal abscess, and abscess of the left forearm. In a month the suppuration of the orbits ceased, and both eyeballs shrank. The patient regained her general health in three months. The ocular inflammation was considered to be probably embolic in its origin.

NOTE ON THE OPERATIVE TREATMENT OF SCLERAL WOUNDS.

Dr. George A. Berry (Edinburg) communicated a paper on this subject, in which he drew a contrast between the course of perforating wounds of the sclera as compared with similar injuries to the cornea. The more unfavorable termination of the former he attributed to greater liability to infection, owing either to the imperfect apposition of the lips of the wound, or to the absence of that copious outpouring of lymph or gush of aqueous, which carried away micro-organisms when the cornea was wounded. He considered the most effectual method of removing and excluding micro-organisms consisted in thoroughly washing with corrosive sublimate solution, and then detaching and stretching the conjunctiva across the opening in the sclerotic, and compared this method to the converting of a compound into a simple fracture. He was averse to direct suturing of the sclera on account of the risks and complications it introduced, and considered it practically impossible to keep a wound in the conjunctival sac aseptic by means of lotion or dressing. It was usual for him to remove a portion of conjunctiva on one side of the wound, so that the suture subsequently introduced might not lie directly over it. Any portion of prolapsed vitreous might be snipped off after the introduction of the stitches and before they were drawn together.

ACUTE CELLULITIS OF THE ORBIT WITH A FATAL RESULT.

Mr. Simeon Snell (Sheffield) recorded this case, occurring in a young girl of 14, and following a swelled face due to carious teeth. Two teeth had been removed from the upper jaw

on the corresponding side, and subsequently, while the face was still swollen, the patient had been for a drive on a cold day in an open trap. When seen a fortnight later there was great swelling of the lids on the right side, with proptosis and œdema of the conjunctiva. There was apparently no affection of sight, but ophthalmoscopic examination was not possible beyond that which sufficed for the observation that the media were clear. There had been considerable pain in the orbit with headache and vomiting. Three days later a considerable quantity of pus was let out by an incision through the inner third of the lower lid. Its escape afforded great relief, and the eyeball resumed its normal position. Two days later, however, the patient was much worse; there was great pain extending to the occiput, with vomiting and retraction of the head. She passed into a comatose condition and died the following day. There were no convulsions, but the pain in the head was complained of as long as she remained conscious. The condition of the orbit appeared quite satisfactory, and the drainage tube had been removed. A post-mortem examination was not allowed. It was ascertained that at the extraction of two teeth from the upper jaw there was a discharge of very fœtid pus, and the bone immediately around the roots was necrosed, the gum being inflamed and turgid. The teeth were badly decayed, the dentine being thoroughly softened. There could be no doubt that in this case the condition resulting from the carious teeth was the immediate cause of the necrosis and orbital cellulitis. Mr. Snell referred to two somewhat analogous cases which he had seen, one published in the *Ophthalmic Review*, 1882, the second in the current number of that journal.

CASES OF SYMBLEPHARON TREATED BY A SKIN FLAP.

Mr. Edgar Browne (Liverpool) reported two cases which he had successfully treated in this way. He had done this operation many years ago, but his procedure differed from that lately recommended by Prof. Snellen, in that he stitched the

flap to the eyeball, whereas Snellen applied the flap to the conjunctival surface of the eyelid.

Mr. Silcock said he had performed the operation in question, and had shown the case before the society. He could not speak of it in such glowing terms as did Prof. Snellen. There was much thickening of the skin flap, which had not subsided after the lapse of some months.

THURSDAY, JUNE 12, 1890.

THE ARTIFICIAL MATURATION OF IMMATURE SENILE CATARACT
BY TRITURATION.

Mr. McHardy concluded his paper on this subject, the first part of which he read before the society at the meeting on May 1. An abstract of this paper was published in the *Journal* of May 10, to which readers are referred. In his last hundred cases he had been obliged to remove the lens sooner than he intended in two cases, in both of which useful vision had been restored. In 3% of the cases, sight had been entirely lost.

ARTIFICIAL RIPENING OF CATARACT: FOERSTER'S OPERATION.

Mr. Simeon Snell (Sheffield) read a paper on this subject. After a passing reference to other methods of dealing with the class of cataracts in which the process of maturation proceeded so slowly as greatly to interfere with the comfort of the patient, and often to occasion worry and distress, he proceeded to speak of Foerster's operation. He had performed this method of ripening by trituration of the lens capsule through the cornea in ten cases, being about 6 or 7% of the cataract (senile) operations during the same period. He gave particulars of each case, and thought well of the operation. If performed with care, it appeared free from harm; if its immediate object was not attained, as in two of his cases, no evil results had ensued. No iritis nor ocular irritation had been occasioned in any case. The increased opacity showed itself fre-

quently a few days after the operation, and extraction of cataract could generally be proceeded with in a month to six weeks subsequently. The stroking of the capsule should be gently done and in the centre as much as possible. The iridectomies in his cases had been small and made downward, and the extractions were performed by a shallow lower flap.

Mr. Critchett said that at Leeds a year ago he had expressed the hope that at no distant date an opportunity might offer of gaining statistics on this important subject, which must be faced sooner or later. Already great progress had been made in the methods of extracting cataracts. He spoke of seven or eight cases of which his experience consisted, which had been commenced under great compulsion, and proceeded with only with great caution and some misgivings. Iritis had occurred in two, but no eye had been lost. During the last few years his success had quite equalled his expectations, and he thought that immature cataract could be removed almost as well as mature ones. He was convinced that it was wiser to wait till the patient could no longer see to find his way about before operating, and referred to a saying of Mr. Critchett, Sr.: "You must always remember that the probabilities in ophthalmic surgery are so delightful that every one would want to become an oculist; the possibilities, however, are so dreadful that they can only be mentioned to oneself in a whisper."

Mr. Tweedy said that his experience in dealing with immature senile cataract was scarcely comparable to Mr. McHardy's. For more than nine years he had operated, when the necessity arose, upon unripe cataracts—that is, where both eyes are so affected that the patient was unable to follow his occupation. The results had been satisfactory, and this he ascribed entirely to the *modus operandi* he employed, which consisted essentially in opening the lens capsule at its extreme upper periphery after performing iridectomy. By this procedure the face of the anterior capsule was untouched, and any lens matter which remained behind or which formed subsequently was inclosed in the capsule in its natural position, and did not come into contact with the iris. In the seven years,

1881 to 1888, he had operated upon twenty-nine immature senile cataracts at Moorfields Hospital. Of these one eye was lost from late serous iritis and glaucoma, two suffered from a sharp attack of iritis, and one lost a little vitreous. He assured Mr. McHardy that most ophthalmologists were fully alive to the importance of dealing with this class of cases. He had had no personal experience of trituration of the lens, but he thought that there were several possible drawbacks to the operation. Mr. McHardy had stated that iritis frequently followed trituration, and this was certainly an undesirable state of things to precede extraction; there was another possible drawback, namely, that the friction might induce thickening of the anterior capsule, and thereby lead to difficulties in secondary capsule operations. Of the twenty-nine cases referred to, a "secondary" needling was required in thirteen; he had not examined his records for the last two years.

Mr. Hulke said that he had come rather to listen and learn than to speak, as his experience did not furnish him with sufficient grounds for forming a judgment; but he fully endorsed the views of Mr. Critchett and Mr. Tweedy with regard to the ethics of this question, and would not himself feel justified in meditating the operation or suggesting it to a patient.

Mr. McKinlay said he had not taken kindly to the trituration operation described by Mr. McHardy, when he had first seen it performed. Recently he had been more favorably impressed therewith, and had performed the operation in about twelve cases. In all he had obtained satisfactory results, and no undue toughness of the capsule had followed.

Mr. Henry Eales (Birmingham) said he had not yet had a very wide experience in operating upon immature cataracts except in some cases of nuclear opacity. He had operated in such cases now about 30 times, being at first compelled by circumstances. One case was that of a farmer, who had already lost one eye and was incapacitated by opacity in the other lens. The result was good, the man obtaining vision equivalent to $\frac{5}{vi}$. In no case was there failure in obtaining maturation. The lenses were removed about six weeks later.

The cases exhibited slender adhesions of the iris to the capsule, which easily gave way to atropine. The lens generally came away very cleanly, leaving a clear pupil, and no after-needling was required.

Dr. Hill Griffith (Manchester) had done the operation in 28 cases, but always by direct trituration by means of a silver spoon introduced through the iridectomy wound. In 24 of these cases, no result whatever was produced in 13, or just over a half, and in one of these partial dislocation of the lens took place; this was the only mishap he had had from the operation. In the remaining 11 cases rapid maturation was effected, followed by extraction, with slight loss of vitreous in one case only. Good vision was ultimately obtained in all, but convalescence was very tedious from retention of cortex. The operation was useless for dealing with opacities which had no natural tendency to progress, as he had proved in zonular cataract and cart-wheel-like opacities in the posterior layers of the lens, and he had been disappointed in several cases of exceptionally slow growing cataracts, so that he thought that the cases in which the procedure might be of use were not so frequent as Mr. McHardy's statistics seem to indicate.

Mr. Brailey thought the question required very careful examination, first on account of the limited applicability of the method, and secondly with regard to the ethics. In many cases the condition of the lenses did not seriously interfere with the occupation and progressed very slowly. Of 82 immature cataracts seen in 1½ year 26 were seen a second time, and of these only 4 required operation, and only 4 others had progressed appreciably. In many, vision had actually improved probably through a diminished use of the eyes. The ethics of the question also deserved careful consideration. Iridectomy had been introduced as a panacea for everything, and had brought operating to some extent into disrepute. Many cases operated on when immature would probably not have advanced if left alone. The eye was subjected to great risks by

the operation, and he thought they should advance very cautiously in its employment.

Mr. McHardy, in response, thanked the members of the Society for the interesting discussion which had been elicited, and replied briefly to some of the remarks made by different speakers.

MEETING OF THE BRITISH MEDICAL ASSO-
CIATION, BIRMINGHAM, JULY, 1890.

SECTION OF OPHTHALMOLOGY.

President, D. C. Loyd Owen, F.R.C.S.I.; Vice-Presidents, Henry Eales, M.R.C.S., and John B. Story, M.B.; Honorary Secretaries, Henry E. Juler, F.R.C.S., and E. Wood White, M.B.

The Section having been welcomed by the President, a discussion on "Myopia, Its Causes, Prevention, and Treatment," was opened by papers by Messrs. Priestly Smith and Richardson Cross, and continued by Messrs. Eales, Juler, Grossmann, Bell, Snell, Macnamara, Dr. Bull (Paris), Messrs. Cant, Hewetson, Wray, and the President. Mr. Cross and Mr. Priestly Smith replied, and on motion of Mr. Bell, seconded by Mr. Wray, the following resolution was adopted:

"That the officers of the Ophthalmological Section communicate with the Ophthalmological Society of Great Britain and Ireland, with a view of making recommendations to the Educational Department for the control of the increase of myopia in Board Schools."

Dr. Arthur Benson read a paper on "Blepharocheiloplastic Operations," which was discussed by Messrs. Juler, Eales, Cross, Cant, Snell, and Dr. Reeve (Toronto).

Dr. Karl Grossmann read a paper on "Color Blindness."

THURSDAY, JULY 31.

A paper on "Ophthalmia Neonatorum" was read by Dr. Karl Grossmann, and the following resolution was subsequently adopted, on motion of Mr. Snell, seconded by Dr. Griffith:

"That the question of prevention of purulent ophthalmia be referred to a committee, consisting of the President of the Sec-

tion (Mr. Lloyd Owen), Mr. Snell and Dr. Grossmann, and that they be asked to prepare a resolution to be presented on this subject at the next annual meeting, and that they obtain, if possible, the aid of the Obstetric Section, with a view of bringing the subject before a general meeting of this Association."

Mr. M. McHardy read a paper on the "Treatment of Immature Senile Cataract," and the subject was discussed by Messrs. Hill, Griffith, Grossmann, Eales, Snell, Panas (Paris), Reeve, and the President. Mr. McHardy replied.

A new syringe for extracting soft matter in cataract operations was shown by Mr. Kant, and Messrs. Story, Juler, and Eales made some remarks upon it.

M. Panas (Paris) read a paper on "The Treatment of Secondary Cataract," upon which the President and Messrs. Story, Ruttle, Juler, and Eales made some remarks.

FRIDAY, AUGUST 1.

A paper on the "Treatment of Squint Amblyopia" was read by Mr. Wray, and discussed by Dr. Hill Griffith, Dr. Cardew, Messrs. Priestly Smith, Juler, Story and Eales. Mr. Wray replied.

Dr. A. Hill Griffith read a paper on the "Diagnosis of Intra-ocular Growths," which was discussed by Mr. Eales and Mr. Story.

Dr. Hill Griffith also read a report of a case of "Monocular Vertical Hemianopsia," upon which Mr. Eales made some remarks.

Dr. Edridge Green read a paper on the "Quantitative Estimation of Defects of Color Vision."

A paper on "Astigmatism" was read by Dr. Bull (Paris).

Mr. Henry Eales read a paper on the "Choice of Anæsthetics for Ophthalmic operations."

A paper by Mr. E. Roberts on "Death in Cases of Cataract Extraction" was taken as read.

The proceedings then terminated.

TENTH INTERNATIONAL MEDICAL CONGRESS.— BERLIN.

SECTION OF OPHTHALMOLOGY.

CAPSULOTOMY.

On Monday, August 4, the scientific work of the Section was introduced by Professor Knapp (New York) with a paper on Capsulotomy. All methods were objectionable except that of peripheral section and subsequent secondary operation. The latter was quite harmless, and alone able to affect a permanent cure. The old vertical incision in the capsule left a cicatrix and so did free opening of the capsule, while partial removal with forceps, with or without previous capsulotomy, was either successful or dislocated the lens, and causes loss of vitreous.

MM. Dufour, Wickerkiewicz, Gayet, O. Haab, and Professor Schweigger, spoke, and Professor Knapp replied.

The discussion showed that every method had its advocates and its detractors.

CATARACT.

Dr. Vignes (Paris) read a paper on operations for secondary cataract, and exhibited a new scissors for dividing secondary cataracts.

Dr. Chisolm (Baltimore) presented a communication on the after-treatment of cataract operations by isinglass plaster, the second eye being uncovered.

Dr. Roosa observed that the method was neither novel nor useful.

Drs. Fuchs and Gruening also spoke.

TRACHOMA.

On August 5, a discussion on trachoma took place, in which Drs. Raehlmann, Schmidt-Rimpler, Swan Burnett, Chibret, Liebreich, Sattler, Logetschnikoff, Goldzieher, Wickerkiewicz, Helsrath-Konigsberg, Cohn, Knapp, Hirschberg, and Van Millingen took part.

It seemed to be generally admitted that the principal disposing influence in the production of trachoma were race, climate, and hygienic conditions, some races and some districts being remarkably free from the disease, and the upper classes everywhere generally exempt.

CONTAGIOUS CONJUNCTIVITIS.

Dr. Weeks (New York) read a paper on the pathology of acute contagious conjunctivitis.

PROPHYLAXIS OF BLENNORRHOEA NEONATORUM.

Dr. Karl Grossmann (Liverpool) spoke on the prophylaxis of blennorrhœa of infants, and proposed three resolutions:

1. Each midwife ought to be instructed during her time of apprenticeship about the symptoms and treatment of infantile ophthalmia. This ought to be notified on her certificate.
2. In every case where the signs of an inflammation of the eyes occurs during confinement, the midwife should be compelled to give notice to a medical man (in case of the poor, to the parish doctor) or some other authority.
3. In case the midwife omits any of these points, her certificate should be withdrawn or a fine imposed.

The Section was unanimously in favor of the above propositions, but it was thought wiser to leave the regulation of such matters to the authorities of each separate country, and not to come to any resolution on the subject.

LATENT STRABISMUS.

Dr. Gradle (Chicago) exhibited an ingenious instrument for

determining the angle in latent strabismus, and Dr. Berry (Edinburgh) showed a stereoscopic phenomenon, and Maddox's device for determining the point of equilibrium of the ocular muscles.

In the subsequent discussion, Javal stated that astigmatism was usually the cause of asthenopia and latent strabismus, and Roosa asserted roundly that muscular insufficiency had no existence, but was always an effect of astigmatism.

Landolt, Hirschberg and Stevens protested against these views, and asserted their belief in pure muscular asthenopia.

OTHER PAPERS.

The following papers were also read:

1. M. Valude.—A Pathological Study.
2. Dr. Schneller (Danzig).—Contribution to the Theory of Squinting on the Basis of Anatomico-Pathological Researches.
3. Dr. Landolt (Paris).—The determination of the Prisms in Ophthalmological Practice.
4. Dr. Swan M. Burnett (Washington).—A Metric System of Numbering and Measuring Prisms with Exhibition of an Instrument for Setting Prisms.

TEST FOR COLOR VISION.

The following abstract of the papers and discussions will give some idea of the proceedings. On August 6, Dr. Grossmann (Liverpool) exhibited a new apparatus for color vision, the object being to detect very small scotomata, and establish the normal standard for the perception of small colored lights.

Dr. Augstein (Bromberg) regarded Dr. Grossmann's tests as the most practical ever published, if only the manufacturers could construct it more satisfactorily.

Professor Raehlmann exhibited curves which he had obtained for the perception of color in normal and color-blind eyes.

ADAPTATION IN DISEASED AND HEALTHY EYES.

Dr. Schirmer (Gottingen) read a paper on this subject. He had found the albinotic light sense equal to that of the pigmented eye, and that of the night blind was also equal to the normal after prolonged adaptation. Night blindness he considered with Treitel to be a disease of adaptation, which depended upon some as yet unknown process in the pigment epithelium.

Professor Uhthoff (Berlin) opposed these views, as he had found the light sense defective in night blindness.

Dr. Gruening (New York) also spoke.

Dr. Schirmer, in reply, suggested that Professor Uhthoff had not given sufficient time for adaptation before testing the light sense; from twelve to twenty-four hours is sometimes necessary.

NEW OPHTHALMOSCOPE.

Dr. Lyden Borthen (Trondjem) exhibited a new refraction ophthalmoscope.

PERIMETRIC TESTS.

Dr. Bjerrum (Copenhagen) read a paper on an addition to the ordinary perimetric tests and the fields of vision in glaucoma. He uses very small test objects at considerable distances, and by this means could detect defects which escaped ordinary perimetric tests. He had thus found the field affected in the early stages of glaucoma.

Mr Berry (Edinburgh) fully approved of Bjerrum's method; it was useful in glaucoma and in amblyopia from toxic, as distinguished from inflammatory, lesions of the nerve.

In this Professor Hirschberg (Berlin) agreed.

REFRACTION.

Dr. Ramos (Mexico) contrasted the refraction as found by

him in Mexico with that found by Cohn and others in Europe. The chief point was the almost complete absence of myopia in the native race. It occurred among half breeds, but not to the same extent as among the Europeans living in Mexico.

OTHER PAPERS.

Dr. Arninski (Essen) read a paper upon the relation between the far point of man's eye and his occupation, in which he regarded the hypermetropic as the normal eye.

Dr Gibret (Ghent) read a paper upon Daltonism in connection with the examination of railway servants and seaman.

SYMPATHETIC OPHTHALMIA.

On August 7, a discussion on this subject was opened by Mr. Brailey (London) in a speech which gave detailed description of the pathology of the eyeballs which excite and of those which suffer from sympathy. The exciting eyes exhibit a plastic uveitis, with clusters of cells in iris, ciliary body and choroidea, but the choria-capillaris and the pigment epithelium generally escape. Sympathy occurs after serous and suppurative diseases also, and has been produced by non-perforating tumors. In the sympathising eye the disease has begun with papillitis in 10% of cases. In 5% it has not gone beyond papillitis, but generally it is a uveitis of a serous kind with keratitis, punctata and high tension. It seems to travel through the nerve sheaths and then either along central vessels to papilla or along episcleral tissue to iris. It is hard to explain its occurrence in cases of non-perforating tumors, and its general non-appearance after suppuration, if it is caused, as many hold, by a bacillus. As to prevention, a timely enucleation is the best plan, and succeeds, unless the cause lies in the socket external to the globe, but evisceration, resection of the nerve, and iridectomy even have done good. If glaucoma exists in the second eye an iridectomy is useful.

Professor Deutschmann distinguished between sympathetic

irritation and sympathetic inflammation, and gave a brief account of his experiments upon rabbits. He succeeded, as is known, in producing sympathetic inflammation, beginning in the optic papilla, but nearly all the animals died with meningitis. In human eyes removed for causing sympathetic disease, and in the sympathising eyes also, he had always found staphylococci, but he did not assert that these cocci were the only cause of the disease. Possibly they assisted in the elaboration of a chemical poison which was the real toxic agent. There seemed to be several possible routes for the inflammatory process from the globe to the optic nerve sheath or vice versa, namely, the suprachoroidal space, the space around the central vessels, and the space beneath the capsule of Tenon, but in all cases it travelled from one eye to the other by means of the optic nerve sheath.

Dr. Darien (Paris) advocated Abadie's treatment of electric cauterisation or injection of corrosive sublimate solution into the exciting eye, and also injection of the latter remedy into the sympathising organ.

Mr. Cross (Bristol) spoke upon the prevention, and expressed his disapproval of the operation known as Mules', which, in his experience, had led to the occurrence of sympathy.

Dr. Parisotti, Wickerkiewicz (Posen), and Fulton (St. Paul) spoke.

Mr. Berry (Edinburg) considered that Deutschmann had not proved his case. In fourteen eyes removed by him for exciting sympathy, no micro-organisms could be detected.

Professor Cohn (Breslau) described a case of simulation of sympathetic blindness.

Mr. Story (Dublin) warmly supported Deutschmann's opinions, but thought the general septicæmia that occurred in his experiments lessened their demonstrative value. Objectors would always exist until he had produced sympathy without it. He had observed meningeal symptoms in his own practice. Iridectomy had never succeeded in the second eye, but he had been most successful in treating such cases by the

method proposed by the late Mr. Critchette in the *Ophthalmic Review* some years ago.

Dr. Crainicean (Bucharest) spoke.

Professor Haab (Zuerich) had found bacilli in 8 out of 12 eyes enucleated for panophthalmitis.

Dr. Rosenmeyer (Frankfurt) had seen atrophy occur from retrobulbar inflammation due to sympathy without any papillitis.

Dr. Hill Griffith (Manchester) stated that Mules' operation was most successful in properly chosen cases.

Dr. Weeks (New York) opposed Deutschmann's views, as the inflammation he had produced in the second eye was merely a part of a general pyæmia.

Dr. Levy (Strassburg), Germann (St. Petersburg), Logetshnikoff and Pfluger (Berne) spoke, and Drs. Brailey and Deutschmann replied.

IRIDOCYCLITIS AFTER INFLUENZA, ETC.

Professor Laqueur (Strassburg) read a paper on iridocyclitis after influenza.

Dr. Gallemarts (Brussels) exhibited the apparatus of Léon Gérard for the diagnosis of magnetic foreign bodies in the eyeball.

Professor Hirschberg discussed the communication.

ENDOTHELIUM OF ANTERIOR CHAMBER.

Dr. Nuel (Liège) read a paper upon the endothelium of the anterior chamber, and exhibited microscopic specimens showing stomata in the endothelium covering the anterior surface of the iris of rabbits.

SYMPATHETIC OPHTHALMIA.

Professor Rosmini (Milan) presented a communication on the treatment of sympathetic ophthalmia and of trachoma.

TREATMENT OF ACUTE PANOPHTHALMITIS.

Dr. Boé (Paris) read a paper on the treatment of acute panophthalmitis. He has succeeded in isolating a streptococcus which produced contagious panophthalmitis. He advised evisceration and antiseptic injections as preferable to enucleation.

Professor Pflüger (Berne) and Dr. Chibret (Clermont Ferrand) discussed this paper. The latter strongly supported the views of MM. Abadie and Darien as to the hypodermic injections of perchloride of mercury in all cases where mercurialization is desirable.

THE VITREOUS IN GLAUCOMA.

Dr. Haensell (Paris) read a paper on the pathology of the vitreous humor in glaucomatous eyes. The author's conclusions are that the glaucomatous process consists in a hyaline degeneration which invades gradually the cells of all the intraocular tissues, and renders them incapable of performing their vital functions. This degeneration commences in the papilla, and spreads thence to the vitreous. It precedes the state of high tension.

TREATMENT OF CHOROIDO-RETINITIS.

Dr. Darien (Paris) read a paper on a new treatment for central choroido-retinitis and choroiditis disseminata. The treatment consists in hypodermic injections of perchloride of mercury.

Dr. Chibret and Van Millingen spoke in approval of the treatment, and Dr. Darien replied.

COLOBOMA OF CHOROID.

Dr. Talko (Russia) reported a case of bilateral coloboma of the choroid with normal iris, exhibiting drawings of the eye.

Society Proceedings.

FATIGUE OF VISUAL FIELD.

Dr. Willbrand (Hamburg) read a paper upon fatigue of the visual field, and showed charts of the field of vision in illustration of his paper.

In the discussion Professor Pflüger drew attention to the many possible sources of error in examining for such defects.

FORMATION OF NEW EYELID.

Dr. Wickerkiewicz (Posen) described a plastic operation for forming a new eyelid after extirpation of a lid tumor.

EYE LOTIONS.

Dr. Franke (Hamburg) read a paper upon the infection and disinfection of eye lotions. He had found no agent equal to corrosive sublimate.

CHOROIDITIS AND OSTEITIS DEFORMANS.

On August 8, Mr. Jonathan Hutchinson (London) exhibited pictures of a form of choroiditis occurring in subjects of osteitis deformans (Paget's disease), and also of a peculiar form of serpinginous, central and symmetrical choroiditis. The latter could not be attributed always to syphilis.

ULTRA-VIOLET RAYS IN SPECTRUM.

Dr. Widmark (Stockholm) presented a communication on the ultra-violet rays of the spectrum. The author has experimentally proved that the irritation caused by electric light is due to its action on the media, and not to its effect upon the retina, and he has established that this action is due to the ultra violet rays.

EXHIBITS.

Dr. Javal (Paris) exhibited a bifocal lens.

Dr. Valude (Paris) exhibited a case of *Verres Toniques*.

OPHTHALMOMETRY.

Dr. Sulzer (Winterthur) read a paper upon the bearing of the angle α to ophthalmometrical measurements, and its determination by means of the ophthalmometer.

Professor Pflüger (Berne) gave an account of some ophthalmometrical observations. In a discussion on ophthalmometry, Dr. Swan Burnett (Washington), Dr. Javal (Paris) and Prof. Cohn (Breslau) expressed their favorable opinion of the ophthalmometer.

RETINAL CHANGES IN HYDROPHOBIA.

Dr. Falchi then requested Professor Helmholtz to take the chair, after which he read a paper upon the retinal changes in hydrophobia, produced experimentally.

THE OPTIC NERVE.

On August 9, Dr. Berheimer (Heidelberg) read a paper upon an anomaly in the optic nerve, and upon the anatomy of the roots of the nerve.

SIDEROSIS BULBI.

Dr. Bunge (Halle) read a paper upon siderosis bulbi, and exhibited specimens.

CATARACT EXTRACTION.

Dr. Bono (Turin) read a paper upon 1,250 cases of cataract extraction. In the last 200 only 1% were lost and 7% were but partially successful. The operation done was that of Speri-
rina without iridectomy.

In the discussion, Dr. Wickerkiewicz expressed himself as daily more satisfied with the results of his method of washing out the anterior chamber.

MICROSCOPICAL SECTIONS.

Professor Uhthoff exhibited microscopical sections and drawings of various pathological states of the optic nerve.

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COMPLETE PARALYSIS OF THE LATERAL
MOVEMENTS OF BOTH EYES.—ABILITY
TO CONVERGE REMAINING INTACT.

BY DR. B. L. MILLIKIN,

Ophthalmic and Aural Surgeon to Charity, St. Alexis and City Hospitals,
Cleveland, Ohio.

The following case, a unique one in my own experience, I present as worthy of record:

M. McL., æt. 33 years, married, born in Ireland, laborer, presented himself at the Out Patient Department of the Western Reserve University, March 21, 1890, with the following history. Twelve or thirteen years ago first noticed that he saw double, but this passed off in a short time; he can remember no other symptoms. Occasionally since then he has seen double but he is not able to give any definite information about these attacks. Six or seven weeks prior to the time I first saw him he states that he had an attack of the Grippe, and since that time he has had a great deal of pain in the head in different parts, quite severe at times, and he has been much annoyed by the double images. The patient is a large muscular looking man, weighing 190 to 200 pounds, somewhat stupid

in his mental make up, and has been addicted to the excessive use of alcoholic stimulants for ten or twelve years. Denies any history of syphilis. Examination shows in each eye V. = $\frac{4}{1x}$ (?). In his winking one notices that the left eye does not close nearly so quickly or fully as the right—as if acting very sluggishly—but it does close by forcible use of the orbicularis muscle. When an object is carried up or down before the eyes they follow it perfectly well and freely. When, however, the object is carried either to the right or the left of the median line both eyes are firmly fixed and in no position of the field can the eyes be seen to turn laterally. When we ask the patient to fix the finger and this is carried toward the eyes the two eyes are seen to converge so that the finger may be carried to within seven or eight inches of the eyes, they still fixing in the median line. Pupillary reaction is normal in both eyes. The ophthalmoscope shows each optic disc small, round, with a narrow choroidal ring, a slightly deepened pearly color, a slight degree of H. and fundus otherwise normal. The general condition of his nervous system was examined by my friend Dr. H. S. Upson, who reported no paralysis or anæsthesia of the upper or lower extremities, knee jerk fairly marked, equal, no ankle clonus, and no tenderness on percussion over the skull. The only history of any illness we can find is that he had an attack of malaria about three years ago, lasting four or five weeks. The patient was ordered grs. x. of potass. iodid. three times daily. One week later he returned the right eye especially showing very perceptible lateral motion with vertical movements free. The excursion outwardly of the right eye was well marked while the inward excursion was much less. The left eye would barely turn beyond the median line outward. I should have been disposed to attribute great virtue to the use of iodide of potassium, had I not taken the precaution to inquire if he had taken the medicine, when he informed me he had spilled it and had taken but a few doses.

On April 4, I again saw him when I found the lateral movements of the right eye seemed to be quite normal, while the

condition of the left eye was improving with very perceptible movement of the eye-ball outwardly beyond the median line, but the movements of the eye very plainly still lagged behind those of its fellow in both lateral directions, much more so, however, when the object was carried to the patient's left. The other movements of the eye-balls continued normal. The iodide of potassium had been continued.

Since this date I have not seen the patient and do not know the final outcome of the trouble. The only indication of there being or having been any other paralytic symptom about the face other than the eye-balls themselves, was the slight impairment of motion observed in the left eye in winking.

The case seems to me unusual in the paralysis being confined to the eyes alone, the trouble being an acute one, not being congenital, and subsiding so rapidly.

EXPERIENCES WITH PYOKTANIN IN OPHTHALMOLOGICAL AND OTOLOGICAL PRACTICE.

BY ADOLF ALT, M.D.

Read before the St. Louis Medical Society, October 11, 1890.

After having carefully perused a paper by Prof. J. Stilling, of Strassburg "On the Aniline Colors as Disinfectants," which was published in the April number of the *Archives d'Ophtalmologie*, I felt that Stilling's name might be a warrant for the correctness of the statements therein contained. I was certainly struck with the carefulness with which the exhaustive experiments seemed to have been made, and with the rationality of the deductions derived therefrom, and I felt that it was my duty to give my patients the benefit of his labors as soon as possible. Since June I have used it daily in my practice. I used exclusively the methyl violet, as sold by Merck, chemically pure, under the name of pyoktanin, and I did so according to Stilling's recommendation in solutions of 1 in 2,000, 1,500 and 1,000; and in the shape of a pencil.

The main qualities of this remedy as claimed by Stilling are, that it is non-poisonous; that after having rendered a wound aseptic, it will keep on doing so for a prolonged period; that it will be taken up by the tissues and be carried into their depth. The microbes which it destroys, *par excellence*, according to Stilling, are the pyogenous ones. He found that a solution of 1 in 64,000 even would arrest their growth, while one of 1 in 2,000 would absolutely destroy their vitality.

Purulent processes, then, were the ones in which to try its efficacy first. At the time when I received the remedy I was treating several cases of corneal ulceration, on which I tried

it at once, and I will state right here, that I was greatly disappointed. In one case, in spite of the application of the pyoktanin pencil to the fundus of the ulcer, and later on of repeated instillations of a 1 in 2,000 solution, the ulcer grew larger and larger. Finally, being convinced that I was losing ground as well as time, I gave up the pyoktanin and treated the case without it, and with much better effect. In some other cases of corneal ulceration pyoktanin did no better, perhaps no worse, than other methods of treatment. In one case of abscess of the cornea after a slight injury, the whole cornea was destroyed in a shorter period than, I think, I have ever seen it before. All of these patients, and a number of other ones treated with pyoktanin, stated that they "felt" considerably better after the instillation. Pyoktanin, therefore, seems to have a certain amount of analgesic power.

Contrary to J. Stilling's invariable experience, I never saw the contents of the anterior chamber and the iris become blue after the instillation of pyoktanin into the conjunctival sac, although the external surface was deeply stained. Even the deepest staining had almost totally disappeared after 24 hours.

In a case of furuncle near the outer canthus, and a case of purulent dakryocystitis, pyoktanin acted well.

The best results in purulent affections I have, however, seen in cases of purulent otitis media, with or without polypoid formations. Having cleansed the ear carefully with cotton, I instill three or four drops of the pyoktanin solution. Even after one such treatment the character of the discharge is altered. From muco-pus or pus it is changed to almost simply glassy mucus. In old cases the disagreeable smell disappears, and where pain exists the instillations seem to greatly modify it. Granulations, and even larger polypoid formations undoubtedly are materially influenced by pyoktanin. They shrink rapidly, especially at first. In acute and subacute otitis media purulenta, I have seen the discharge disappear after one or two instillations, and while in some cases it would, later on, reappear, in others it staid away as long as they were under observation.

I suppose the good results in these cases were largely due to the fact that the pyoktanin remained constantly in contact with the diseased surface, and when being dissolved by new discharge at once acted upon it as a disinfectant.

In a few cases of furunculosis of the external meatus its action was very beneficial.

I tried pyoktanin, further on, in a considerable number of cases of parenchymatous keratitis. All of them felt better—but, with the exception of one case in a child, none made any remarkable progress.

In several cases of marginal blepharitis and phlyctenular keratitis I obtained no favorable results whatever.

In a case of very severe syphilitic iritis with gummata, the influence of one or two daily instillations seemed to be beneficial—certainly, the patient was every time relieved from his pain.

In several cases of more superficial injuries to the eye which I saw soon after the accident, pyoktanin seemed to act as well as could be wished for. In injuries involving the deeper parts of the eye, it did no more good than other antiseptics.

I especially mention all these cases, since Stilling had stated, that his results in similar cases had been remarkably excellent. The power of penetrating into the depth of the tissues, and there, so to speak, to hunt for the microbes and to kill them, which Stilling considered as one of the chief characteristics of the aniline colors, I have, I am sorry to say, not been able to verify.

I have used it, furthermore, in a comparatively large number of eye-operations. Here it has done well—or at least no infection took place—but the same result has been reached by other antiseptics, and even before we had them. After this statement I have to mention one case in which enucleation of an eyeball was followed by erysipelas in spite of pyoktanin and other disinfectants. Silk sutures disinfected with pyoktanin have done decidedly better than with other disinfectants, so that I have been enabled to leave them *in situ* much longer without the least pus-formation, or even redness around them, than with any other antiseptic remedy.

In a second paper, in which Stilling tries to save his child from being too early choked to death by adverse reports, he still maintains his first statements, but he now recommends the remedy in much more concentrated forms. These I have not tried, because even a solution of 1 to 1000 was very disagreeably felt in the eye, and in one case caused excessive pain.

To sum up my experience to date, I may say that in ophthalmic practice my results do not show that pyoktanin is any better than, or, perhaps, even as good as, the bichloride of mercury, and it is, moreover, a somewhat disagreeable thing to handle on account of the staining.

I find it to act very well in purulent otitis media, and furunculosis of the external auditory canal.

It is probably as good an antiseptic as the bichloride of mercury to be used after operations, and decidedly better for sutures.

It has neither aroused my enthusiasm, nor would I feel content to simply throw it overboard, until I have made further trials. That it is not all that Stilling claims for it, I am certain.

SOCIETY PROCEEDINGS.

A DISCUSSION OF THE CAUSES, PREVENTION, AND TREATMENT OF MYOPIA.

In the Section of Ophthalmology at the Annual Meeting of the British Medical Association at Birmingham, July, 1890.

I.—PRIESTLEY SMITH, M.R.C.S.,

Ophthalmic Surgeon Queen's Hospital, Birmingham.

The subject set down for our discussion is large; we cannot hope to deal fully with every part of it, but the chief points of practical importance will be raised, I think, if I ask you to consider the three following questions:

1. Is myopia a disease?
2. Can we prevent its occurrence or lessen its frequency?
3. On what general principles shall we deal with those who have it?

These are elementary questions, but they cover many points on which we are not entirely agreed, and which we may usefully discuss.

1. *Is Myopia a Disease?*—Donders, writing in 1864, said:¹ "The emmetropic eye is the normal eye. * * A near-sighted eye is not a sound eye. * * Progressive myopia is a true disease of the eye. * * In youth almost every myopia is progressive." On the other hand, he admits that a slight degree of myopia may have its advantages for men engaged in study or minute work, and that in advanced life a

¹Donders, *Refraction and Accommodation of the Eye*, New Sydenham Society, vol. xxii, pp. 341, 343, 392, and 213.

moderate myopia does not threaten the eye with any special danger, and confers a privilege, namely, that of reading easily without glasses, which may well be envied by emmetropic eyes. In the pages of later writers we find doctrines which differ considerably in one way or another from that of Donders. One or two quotations will suffice. Landolt² is inclined to regard myopia, when it is not accompanied by damage of the tissues, as an adaptation of the organ "to the functions of a superior race," as being "instituted in the interest of intellectual progress." He confesses, however, that Nature, in thus attempting to better the refraction, has not yet improved upon the workmanship of the emmetropic eye; that, on the contrary, she very frequently overshoots the mark, and not only makes the eye much nearer sighted than is desirable, but greatly damages its tissues in so doing; that myopic eyes bear the imprint of forced evolution, and are the type of hypertrophy rather than of perfection.

Berry³ takes a somewhat similar view of the matter. He says that great confusion has arisen from a failure to discriminate between the myopia due to disease and the much commoner myopia which is the expression of a particular type, and is no more to be looked upon as pathological than is, for instance, the attainment of a greater than average stature. He says that we have wrongly assumed that the fate of a malignant myopia is the possible fate of every myope, and that this false assumption has given rise to all sorts of theories to explain the progression of myopia during the period of growth, and to a corresponding number of more or less unpractical proposals as to how such progression is to be stopped.

Stilling⁴ speaks even more positively to the same effect. He asserts that myopia of progressive type and disastrous issue is originally and essentially of different nature from the milder

²Landolt, *Refraction and Accommodation of the Eye*, English Edition. pp. 420 and 421.

³Berry, *Diseases of the Eye*, 889. v. 417.

⁴Trans. of Ophth. Soc. at Heidelberg, 1886, p. 14, see Ophth. Rev., vol. vi, p. 7.

forms; it is not an aggravation of the latter. In high myopia, he says, the eye is diseased; it is not diseased because it is myopic; it is myopic because it is diseased.

Now, if these differences of opinion had no bearing on our manner of treating myopia we could afford to trouble ourselves little about them; but this is not the case. Our very aims in dealing with this widely spread condition of the eye must vary according as we read its nature in one way or another. If we really believe that Nature, when she transforms an emmetropic boy into a myopic youth is attempting to improve the race, we must, of course, welcome her efforts so long as she does not go too far or spoil the tissues of the eye. If we are convinced that high and disabling myopia is a fundamentally different thing from moderate and innocent myopia, and not an aggravation of it, we shall, of course, take no steps to prevent the one from developing into the other; but if, on the other hand, we regard every myopia from its very outset as an optical defect—a defect which from an innocent beginning may, for aught we can tell beforehand, pass on to a grave ending—we shall strive to prevent its occurrence if possible, and when it does occur to arrest its progress as soon and as completely as possible.

Let us briefly consider the facts. Up to the age of 45 at least, the emmetrope commands clear retinal pictures of objects at every distance greater than 12 inches from his eyes. Whether he be a philosopher or a sportsman, a newspaper editor or a landscape painter, a clerk at the desk or a sailor on the lookout, his eyes are perfect for his purpose. He enjoys an extent of visual power which the most fortunate myope can only obtain by artificial means. Beyond 45 or 50, the emmetrope, while he still has an advantage over the myope in distant vision, is at a disadvantage in reading; he must use glasses, while his slightly myopic rival still reads easily without. Either may now claim to be the better off; it is purely a question of taste; but we must remember that the myope has paid for his temporary privilege by a lifetime of short sight, while the emmetrope through nearly half a century has had no

disability whatever. Even the ophthalmic operator, who knows how helpful a single dióptre of myopia may be to him at 50 years of age, will admit that the balance of advantage lies, on the whole, with the emmetrope.

Myopia, we are told, is the companion of intellectual progress, and truly it appears to be so, but it is a bad companion, not a friend. The details of the landscape, the shapes and movements of living creatures, architecture, pictures, the drama, the expression on the faces of our friends, surely it is well for the most intellectual man or woman to see these things without artificial aid. The emmetrope can see them all, and his books as well, until he is more than middle-aged, and then a pair of reading glasses restores to him all that he loses. If Nature really wishes to ease the toil of the scholar by shortening the focus of his eyes, she should at least reverse the action of his ciliary muscles and give him an active accommodation for distance, so that he might still in his leisure moments look abroad beyond his books.

In my judgment, then, myopia is a defect even when we regard the optical condition only. When we regard the tissue changes which frequently accompany it, the matter is still less open to question. What is the nature of the myopic process?

In early infancy, hypermetropia appears to be the normal condition of the human eye. During childhood, among civilized peoples at least, the large majority of eyes become emmetropic, or nearly so; in other words, the refraction increases with the growth of the eye in very early life. This implies not a simple increase of size, but a change of proportion in certain dimensions; the length of the globe increases more than the focal length of the media. In many cases this increase is insufficient, and the eye remains permanently hypermetropic; in other cases it is excessive, and more or less myopia is permanently established. Hence the assertion that myopia in many cases is in no sense pathological, but simply the expression of redundant growth. The doctrine is reasonable, and is supported by the fact that in many cases of slight

and moderate myopia we find no morbid tissue changes, and that at the time when the growth of the body is completed, the myopia usually ceases to increase. But it is a dangerous doctrine, for it fails to cover certain other facts which cannot be safely disregarded.

In many cases of slight and moderate myopia, and in nearly all cases of high myopia, we find morbid tissue changes which imply something very different from redundant growth, namely, extension, thinning, and atrophy of the tunics in the neighborhood of the optic nerve—changes which appear to show that the strain falling on these membranes in this situation is greater than they can adequately bear. The amount and increase of the atrophy is clearly connected with the amount and increase of the myopia. In the same eye it may be absent when the myopia is beginning, well marked when it is further advanced. Clearly, then, we have often to deal with some cause or causes beyond a mere excess of normal growth.

The position and nature of the atrophy, the conditions of life under which it is chiefly met with, its increase under certain circumstances, its non-increase under others—all appear to show that it is caused mainly by the action of the muscles during convergence of the eyes, at a time of life when the sclera in the neighborhood of the optic nerve cannot adequately bear the strain, in other words, the overuse of the eyes on near objects in early life. According to Donders, strong convergence, the stooping position, and certain predisposing conditions are the principal causes of staphyloma posticum, and staphyloma posticum is almost synonymous with myopia. All subsequent investigation has, in my opinion, tended to substantiate this dictum.

What are the causes which predispose certain children to become myopic while others living under similar external conditions remain emmetropic or even hypermetropic? Various possible causes have been suggested; for example, peculiarities in the structure of the sclera, especially at the point where it joins the sheath of the optic nerve; peculiarities in the optic

nerve, which cause it to offer a more than usual resistance to the rotation of the eye; peculiarities in the muscles affecting the directions in which they act upon the globe or their relations to the emerging vortex veins; peculiarities in the size, shape and position of the orbits. The evidence as to these predisposing causes is not yet, I think, very definite or conclusive. Of more practical importance is the distinctly hereditary nature of the predisposition; the children of myopes are not born myopic, but they are, as a rule, more apt to develop myopia than are the children of emmetropes. Curiously enough, some people seem to think that because a myopia is inherited it is therefore a natural and unobjectionable condition, which may be allowed to take its own course. The very opposite is true. Myopic parents ought to be doubly careful to protect their children from the active causes of myopia, and this for the sake not of the children only, but of the children's children.

I will not trouble you with figures to prove a close connection between school life and the development of myopia. Since Hermann Cohn led the way by his admirable research at Breslau nearly 25 years ago, statistics of the refraction of school children and college students have accumulated in overwhelming quantities. Their significance is disputed by some authorities, but to my mind, and I think to the minds of most of us, they give strong confirmation to the views of Donders, who, speaking of the injurious effects of continued strong convergence of the eyes and the stooping position of the head during reading and writing, declared that the foundation of myopia is mainly laid in the schools.⁵

It is true that very high myopia is sometimes met with in persons who have never used their eyes much on near objects, for instance, in young children and in illiterate persons belonging to the laboring class. These exceptions do not disprove the rule; they show merely that the tunics may, under some conditions, become over-distended, apart from excessive

⁵Accommodation and Refraction of the Eye, p. 343.

action of the muscles and apart also from glaucomatous pressure in the eye. Whether this depends upon an original defect of structure or upon malnutrition of the tunics we do not know. Possibly the yielding and deformation of the sclera in some forms of myopia is analogous to the yielding and deformation of the bones in rickets.

A very important point in the myopic process is the tendency which it has to react upon itself. Excessive convergence increases the myopia, and the increase of the myopia compels a still greater convergence. The more the boy stoops over his book the more short-sighted he becomes, and the more short-sighted he becomes the more he is compelled to stoop. In this vicious circle the eyes not infrequently go on from bad to worse until, by reason of the altered shape of the globe and the extreme nearness of the farthest point of distinct vision, convergence for this point becomes impossible, and the effort to obtain binocular vision in reading is instinctively given up. Then with a relative or actual divergence of the eyes the excessive muscular strain is at an end and there is a better chance that the myopic process will come to a standstill.

In many cases of high myopia and in some of moderate degree we have also serious congestive troubles in the uveal tract with more or less clouding of the vitreous—changes which are both a consequence and a further cause of extension and atrophy. Detachment and shrinking of the vitreous is not uncommon, and in the worst cases, happily a small proportion only, vision is permanently lost by detachment of the retina.

On the one hand, then, we see many myopes who suffer little inconvenience from their ametropia at any time of life; on the other we see grave disability and even blindness arising from it; but great as this difference is, we cannot safely, in my opinion, draw a hard and fast line between the two types and say here is a normal condition, here is a disease. In so far as the development of myopia in the individual and in the race is under our control we should, I think, persistently endeavor to suppress it and to preserve the emmetropic type.

2. *Can We Prevent the Occurrence of Myopia or Lessen Its Frequency?*—If the foregoing explanations be true, we may answer the question as follows: To prevent myopia, we must prevent young people from using their eyes too long and too closely upon near objects. By doing so we shall limit the chief active cause; the predisposition we shall not immediately affect, but we may reasonably hope that if in each generation the fresh production of myopia is checked, the predisposition to it will in time diminish. This hope is justified when we see the opposite side of the picture. Educational pressure without due precaution has led, in Germany, to an enormous and, as I think, calamitous development of myopia. The question is one chiefly of school hygiene. Elaborate rules concerning school buildings, school furniture, school books, and school hours have been formulated. I will not trouble you with them here. The present need is not a more accurate statement of these requirements, but a wider knowledge of them among the public. The printed sheet which hangs upon the wall was prepared for the purpose of bringing and keeping the matter under the notice of teachers and scholars in the Birmingham board schools. It now hangs in all these schools, and I am told by a member of the school board that, in some places at any rate, it has effected a decided improvement in the attitudes of the scholars. It is of the highest importance that every school teacher should understand in a general way the mischief which may be done by overstrain of the eye. When that knowledge becomes general the favorite scholars will not, so often as at present, carry off their school honors at the cost of damaged eyesight. In my opinion, a periodical testing of the bodily condition—including especially stature, weight, hearing, and eyesight—should accompany the usual examinations in mental growth. The duty of the oculist in relation to this matter lies at present rather in promulgating common sense than in theorizing as to ultimate causes. The knowledge we have is ample for the purpose, if we can get the people to act upon it.

3. Lastly, *On What General Principles Shall We Deal with*

Those Who Have Myopia?—The question sounds absurdly elementary, but I believe that we differ somewhat amongst ourselves in the treatment of our myopic patients, because we are not entirely agreed on general principles. I shall briefly state what appears to me to be the best lines of practice, and hope to excite criticism and discussion.

In every case of myopia the treatment should have a double aim:

- a.* To remove as far as possible the present inconveniences;
- b.* To prevent as far as possible future deterioration of the eyes.

The details of the treatment will depend in each case upon the following circumstances:

1. *The Age and Occupation of the Patient.*—Other things being equal, the earlier in life a myopia begins, the more likely is it to ultimately attain a high degree; and the more the patient is occupied, either through taste or necessity, in reading, writing, or other close work, the less likely it is to come to a standstill. Children born of myopic parents, developing myopia at an early age, and showing an exceptional fondness for books, are especially in need of restriction in study and periodic examination of the eyes. Adults whose myopia is stationary commonly need advice rather as to present inconveniences than as to dangers ahead. Adults with high and still progressive myopia, who still read and write, or sew, without glasses, because, as they commonly say, they do not require them, need, of all others, the firmest interference and the gravest warnings, and must sacrifice some present convenience if they would avoid future disaster.

2. *Upon the Degree and Character of the Myopia*, whether high or low, whether progressive or stationary, whether complicated or not with obvious congestive or atrophic changes. It is a safe rule to suspect every myopia of a tendency to increase, until time has proved it to be stationary; to be doubly suspicious in presence of congestion or atrophy; and to re-examine at intervals—three months, six months, twelve months, or longer, according to the nature of the case. In young

people this is particularly important. It is important because a judicious regulation of the use of the eyes, more or less strict as the course of the case may demand, will check the advance of the myopia if it does not arrest it, and will check the development of the congestive and atrophic changes which too often accompany the advance. To this end we have to inquire as to the amount of book work habitually done, and the manner of doing it. We have often to urge a diminution, especially of evening work by artificial light; and still more often to correct the manner of doing it by insisting on proper attitudes, and by giving glasses and other appliances which render such attitudes possible. In some cases we are bound to advise that all book work shall be given up, perhaps for several years. If we can stop the march of the myopia for a time, we shall gain much, for meanwhile the sclera will be growing stronger, later on it may be better able to bear the strain. For such cases, schools or classes in which young people might be educated with a minimum use of books, pens, and paper are much wanted.

3. *The Range of the Accommodation.*—The myopic eye, being focussed for a near point, uses its accommodation comparatively little. If we give the myope fully correcting glasses, and bid him read with them, we throw an unwonted task upon his ciliary muscles; at first they may be unable to meet the demand; after a little practice, in many cases they recover their normal vigor. Is the accommodative act injurious to the myopic eye? Does it tend to increase the myopia?

Some oculists have maintained that it is accommodation rather than convergence which does the mischief; others, while they regard convergence as the chief offender, yet hold that full play of the accommodation, as when correcting glasses are used for reading, is apt to do harm, and should not be allowed. My own custom, some years ago, was to act on this idea, and to give even to young myopes reading glasses weaker than those required for distance. Later I have come to think differently, partly through reading a forcible article by Forster, an abstract of which may be found in the *Ophthalmic Re-*

view, for January, 1887. My present custom is to encourage rather than to discourage, within proper limits, the use of the accommodation; in other words, to advise those who can to use the same glasses for reading and for distance, and when this is impossible, by reason of weak accommodation, still to give reading glasses as strong as can be worn with comfort. The advantage of such glasses is that they not only enable, but strongly encourage, and sometimes even compel, the myope to increase his reading distance. Experience shows, I think, that the more nearly we are able to re-establish a range and a region of accommodation similar to that possessed by the emmetrope, the better for the patient both in the present and in the future. We are often limited in this direction by impaired visual acuteness, and by the effect of concave glasses in diminishing the size of the retinal images. We must effect the best compromise which the circumstances will permit.

4 *The Presence or Absence of So-Called Insufficiency of the Internal Recti.*—A proper balance between convergence and accommodation is to be obtained if possible. Correcting glasses may establish such a balance. On the other hand, they may greatly disturb a pre-existing balance. A progressive change of glasses, with gradual practice, may therefore be required. Binocular fixation may be favored by decentration of the glasses, by the use of prisms, or by tenotomy. On the other hand, in high myopia, it is often better to encourage monocular fixation in reading, one eye being allowed to wander outward, than to maintain a laborious and injurious convergence.

These are, I think, the chief considerations which should guide the treatment of myopia. I will not attempt to speak of details, or of the more serious choroidal and retinal complications which bring many of our myopic patients to us. We may sometimes palliate these, but we cannot cure them. We can do far more important service to the myope, if he will let us do it, by helping him to avoid these complications than by any remedial treatment after the fact.

It will perhaps serve to promote discussion if I conclude by making the following dogmatic assertions; myopia is always a defect; often a disease. It is entirely incurable, but largely preventable. Its progress can be, and often is, accelerated by improper use of the eyes and retarded by judicious interference.

II.—F. RICHARDSON CROSS, M.B., F.R.C.S.,

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No more suitable subject for discussion in this Section could have been selected than that of myopia, whether as oculists we approach it from the scientific standpoint of the interesting facts that have been elucidated by numerous workers with regard to the anatomical peculiarities which predispose to its development, or with regard to the serious pathological conditions to which it gives rise; or whether we approach it on the ground of public health, and make inquiry as citizens, why this malady is so continuously on the increase and what practical means can be adopted in order to prevent the alarming probability of the bulk of the nation becoming short-sighted, either by direct acquisition or by inheritance.

It must be an extremely rare occurrence for a child to be born short-sighted, but he may be strongly predisposed by the confirmation of the eyeball or by peculiarities in the tissues of which it is composed.

The main general factor in causation is found during the act of convergence, which increases the surface pressure upon the eyeball of the muscles which oppose this act. The external rectus lies in contact with the globe for an average length of no less than thirteen millimetres, and, by its mere tone, exercises considerable side pressure upon the eye. The greater the convergence the more the external rectus enwraps the globe, increases the side pressure, and tends to elongate the antero-posterior diameter of the eye.

Both obliques also evert the optic axis and oppose the act of convergence. The inferior is in closer contact with the

globe than any other muscle (17 millimetres). Its tension would squeeze the sclera and elongate the eyeball. Although the usual length of surface contact of the superior oblique is only about five millimetres, Stilling has shown that this muscle varies considerably in its direction and in the position of its insertion, which may reach back almost to the entrance of the optic nerve. He considers that the form of the eyeball depends mainly upon its relations to the superior oblique. This muscle, in some cases, seriously compresses the eye, or may, by dragging on the margin of the nerve, become the direct cause of a myopic crescent.

The manner in which the muscles enwrap the eyeball will be influenced by the shape of the orbit and the relative position of the globe within it. Take, for example, the position of the trochlea, as varying with the shape of the orbital roof.

With a given anatomical formation as a predisposing cause, a greater or less degree of myopia will be established according to the amount of convergence exercised by the individual, either in continuance or in degree. We live in an age of excessive convergence. The overtaught schoolboy sits continuously for hours at his books; the clerk lives at his desk; professional and mercantile life is largely passed within an office; and dwellers in towns have their vision usually limited by the opposite side of the street. Numerous statistics and statements by careful observers, and the general experience of ophthalmic surgeons, clearly show the increasing prevalence of short sight in this country, and that this defect is out of all proportion most commonly found amongst those who have used their eyes the most assiduously for prolonged work requiring close vision. It is, moreover, during the period of growth that short sight first appears and is most active in its progress. Attempts to arrest its development must therefore be made during schooldays, with the co-operation of those who are responsible for the scholars—the teachers and the boards of education. Even though in a perfectly healthy eye no amount of work *per se* causes myopia, at the same time it cannot be too distinctly stated that most cases of myopia are

due to overpressure and to hygienic defects in the schools and colleges.

All more recent observations have only confirmed those of Dr. Cohn, of Breslau, who, disregarding all myopias under 1 D, found (1) the higher the school the greater the percentage of myopes: in the village schools, 1.4 per cent; in the elementary schools, 6.7 per cent; in the middle schools, 10.3 per cent; in the technical schools, 19.7 per cent; in the gymnasia, 26.2 per cent; in the university, 59 per cent. In fine of the gymnasia the myopes numbered over 50 per cent. 2. In each school the number of myopes increases from class to class upward, from 15 per cent in the lowest classes of the gymnasia to 56 per cent in the higher classes. 3. The higher the school, or the higher the class in the same school, the higher is the average degree of the short sight.

In April, 1881, a committee was appointed by the Lords Commissioners of the Admiralty to hold an inquiry upon certain points connected with the Greenwich Hospital School, with especial reference to the very large proportion of boys who were found to have become while there physically disqualified for the naval service. Of 1,074 boys admitted at 13 years of age with perfect sight, as tested by Snellen's method, no fewer than 60 were declared unfit for the navy on account of imperfect vision when they passed out of the school at the age of 15 $\frac{1}{2}$ years. Almost all the 60 cases were suffering from myopia, which had thus been proved to arise during the school life; moreover, it was found out of all proportion most frequently, and of the highest grades, amongst the lads of the more advanced classes, who spend most of their time in study and reading. The condition of the school-rooms was found to be very unsatisfactory. Illumination was most imperfect, and the boys were often sitting in their own light. The old-fashioned desks and stools, of the same size for all pupils, necessitated a constrained and awkward position and much bending over the books.

These evils have since been very completely corrected. Cubic space is abundant, obstructive partitions have been re-

moved, and proper windows have been inserted. New desks of varying sizes have been supplied, and have been placed in the proper position with regard to the windows, securing not only abundance of light in every part of the room in which the scholars sit, but its correct incidence.*

At about the same time in Paris, on account of the increase of myopia in children, the Minister of Public Instruction nominated a commission for the hygiene of sight in schools. The commission included school inspectors, publishers, and printers, with oculists, and these drew up practical rules for the guidance of the municipal architects of Paris and the school authorities. Only last November, however, M. Drolais, at the Paris Academy of Medicine, called attention to the alarming increase of myopia in the French schools, which he says will continue if the authorities who ought to realize proposed reforms rest content with their simple proposal. He asserts that school myopia is a question neither of race nor heredity, but is developed in the pupils by the present hygiene defects in the schools and colleges.

Could we to-day in England honestly repudiate such a statement if made with regard to our own educational system? If not, what is to be done to improve matters? It is of the first importance to develop an intelligent interest in this question in the minds of our schoolmasters and to seek their active co-operation. A good deal has been recently written and said about over-education, but with competitive examination based upon its present principles the cram system is likely to become more and more popular.

Long school hours are of no avail unless also study is prolonged through the evening into the night. There is no objection to this in the case of those boys who learn easily or of those of fair physique; but many are broken down by it, and many others are only helped into a false position at the start of life. Another distinction may have been added to the credit of a school, but the individuality of the prize-winner is

*Abstract of a paper by Fleet-Surgeon Henry Hadlow, *British Medical Journal*, May 19, 1883.

lost, and no one is more disappointed with his future commonplace career than himself. In all this over-reading the chief primary strain falls upon the eye, and as a simple question of economy every possible means should be adopted to make its work easy.

1. School books should be well printed, with large, clear letters, easily differentiated from one another, the words well set apart, black on a thick white paper. The practice of giving papers illegibly chromographed for evening preparation by artificial lights is especially deleterious, and the use of the ordinary grey slate should be abolished.

2. The light should fall upon the book directly from the sky; if not, it should be as perfect as possible, plentiful and well distributed. Where artificial light is needed, it should be steady, cool, and bright upon the print, without dazzling. The best possible illumination during evening lessons in the study or at home is no less important than the lighting of the school-room.

The prevention of short sight mainly depends on keeping the eyes of children and young people sufficiently far from their work. For this purpose both seat and desk should encourage a proper position of the head and spine, and a sufficient distance (at least a foot) of the eyes from the book. If necessary, the proper spectacles must be used to effect the same purpose. Sometimes abducting prisms are of value. The fact that face rests or straighteners have come into use in order to prop up the child's head, and prevent it getting too close to the desk, is a sad comment on the excess to which book teaching is in some cases now being carried. Whatever of gain may be given by such barbarous instruments is surely neutralized by the general nerve worry they produce.

The desks and seats should, wherever work is being done, be as perfectly arranged as possible for the purpose required. Much ingenuity and enterprise have been expended on school desks; in the Paris Exhibition of 1867, only three types were shown, but seventy-one kinds were exhibited in that of 1878.

Our distinguished colleague Priestley Smith, a few years

since, devised a simple form of hygienic desk for use either at school or at home upon any ordinary table, a full description of which is given in the *Ophthalmic Review*, 1886, vol. v.

However perfect the conditions are made under which eye work is to be done, there must be a limit to its safe amount, and this will vary with the individual student.

I do not doubt that the hours fixed in the schools are the best for the majority of boys, but for many they are too long. Faulty vision is present probably in about two-thirds of the scholars; hypermetropia mainly, to a less degree myopia; and in either case serious troubles may supervene upon injudicious use of the eyes, or may be prevented by a timely rest.

Many people still believe that short sight is by no means an unmixed evil, and that the inconvenience of wearing spectacles to see at a distance in youth is to be counterbalanced in later years requiring no such artificial aid for reading,

The sad fact must, however, be admitted that the short-sighted eye is an invalid specially liable to congestion and to discomfort even under a moderate amount of work, not infrequently rendered incapable of reading by degeneration of the choroid or even absolutely blinded by detachment of the retina.

The short-sighted eye is an accompaniment of high civilization. A slight myopia is, perhaps, rather an advantage, and it has been suggested that there may be a special tendency to overgrowth of the eye in those who have a high degree of cerebral development, because the eye vesicle being essentially an outgrowth of the brain these two structures tend to grow in unison to a similar extent and at the same time impress a type upon the skull and sclera, whose function it is to protect them.

On the other hand many children have inherited a tendency to a distinctly pathological form of myopia and to serious delicacy of the eye tunics. In these slight overwork readily induces hyperæmia and inflammation of the choroid, with excessive yielding at the posterior pole of the eyeball under pressure of the extraocular muscles.

Unless such cases are carefully watched a vicious circle is started which goes on from bad to worse and more serious future damage can only be averted by absolute avoidance of all kinds of severe eye work.

When any suspicion exists that myopia is progressive the eyes of the pupil should be examined at stated intervals by a competent authority, and if he finds it necessary to recommend some modification of the school curriculum, as, for instance, a rest of a few minutes during every hour of school work or a cessation from evening study, both parents and teachers should recognise the serious risks of neglecting such advice.

III.—HENRY EALES, M.R.C.S.,

Honorary Surgeon Birmingham and Midland Eye Hospital.

Mr. Eales dissented from the traditional teaching that myopia was never congenital. Seventeen years ago a child, *æ*t. 18 months only, came under his notice with a myopia of 11D, and this case at the present time differed little from many of the cases of high myopia which were often seeking advice at hospitals. Certainly the myopia in that case was not caused by education, and it seemed impossible not to believe it to have been congenital, and if so, why might not many of these higher myopias also be congenital? He fully agreed with most that had been said by Mr. Priestley Smith, and believed that by care and the management of moderate cases in young people, on the lines laid down by him, the myopia might be kept within moderate and safe limits. Personally he (the speaker) always fully corrected the myopia, and enjoined the use of those glasses for all reading and writing, unless it was found that the accommodation was weak, when he ordered weaker glasses for near work. He found that in many cases where insufficiency of convergence was present, it was removed by the use of full correcting concave glasses, to the great relief of the patient. He thought this insufficiency one of the chief causes of aching about the eye in myopes; when this was not removed by concave glasses, he was in favor of

combining prisms with the concave glasses for near work. He thought the existence of astigmatism was very prevalent in myopia, and was strongly of impression that it was an important factor in its causation, and always carefully corrected it.

He often found spectacles of compound lenses, containing a spherical, cylindrical, and prismatic glass, most useful in these cases. The most marked features about myopic eyes was their tendency to choroidal diseases, which was found in many different forms.

IV.—HENRY E. JULER, F.R.C.S.,

Ophthalmic Surgeon St. Mary's Hospital.

Mr. Juler entirely agreed with the authors of the papers as to the absolute necessity of good illumination, of correct posture, and of moderation of work; and he had no doubt that all members present would be of the same opinion. What they were likely to be at variance about, and what it seemed to him desirable that an opinion should be elicited about, as was to the best way of prescribing correcting glasses. In young myopes, whose eyes presented no signs of choroidal trouble, he entirely agreed that a full correction should be adopted, either at once or by progressive stages. Patients became very happy in their use, even where high degrees of myopia existed. Any existing astigmatism should be accurately corrected. In cases where choroidal troubles were associated with myopia, either progressive or otherwise, he was more anxious and thought more importance should be attached to rest of the eyes and the general health. He had not that fear of using glasses which seemed to exist among some colleagues.

V.—KARL GROSSMANN, M.D.,

Ophthalmic Surgeon Stanley Hospital, Liverpool.

Dr. Grossmann pointed out as one of the most important causes of myopia the existence of astigmatism in children on

the one hand and of corneal opacities on the other. It was evident that in astigmatism no amount of accommodation could produce sharp images, and the child finally resorted to bringing the eyes close to the object, in order to obtain large though indistinct images. The same was the case with corneal opacities. The great amount of strain caused congestion in the myopic eye and it was only natural that the weakest part should give way, and become inflamed and partially lose its function. This was the region of the macula lutea. Dr. Grossmann considered choroiditis as the result, and not as the cause, of myopia. As to prevention and treatment, he preferred to give different glasses for distance and for near objects; or if one glass only had to be given, that for near objects alone. In order to obviate the painful brightness of strong glasses for outdoor wear, he strongly recommended for that purpose neutral-tinted glasses. Prismatic glasses were only rarely of any avail. The effect of the tilted position of folders was of rather small importance, and had to be taken on its own merits. In one case a concave glass would produce astigmatism when tilted, while in another instance it might happen to correct existing astigmatism to a considerable degree. This was often seen in patients who not infrequently and unconsciously corrected their astigmatism by the inclination which they gave to their folders. As for the curability of myopia, the fact that a myopic eye of a child might grow out of its myopic refraction when properly looked after should always be borne in mind, and certainly tended to show that myopia was curable within certain limits.

VI.—SIMEON SNELL, M.R.C.S.,

Ophthalmic Surgeon Sheffield General Infirmary.

Mr. Snell referred to the subject as being closely associated with that of overpressure, and said it was desirable for each of them in his own locality to do what he could to enlist interest in, and impart information respecting, the subject. On two occasions he had been invited to address teachers on the

subject, and he insisted on the point that the invitation on each occasion came from the teachers themselves. He found that they were more alive to the importance of recognising imperfections of vision than was formerly the case.

VII.—C. MACNAMARA, F.R.C.S.,

Surgeon Westminster Hospital and Royal Westminster Ophthalmic Hospital.

Mr. Macnamara said that not having heard the paper he would not attempt to make any comments on the points raised by Mr. Priestley Smith, but having listened to the discussion with great interest the point which had occurred to him was the desirability of individual members exercising their influence upon the educational authorities in the localities in which they resided rather than trusting to effect any practical results through the Government or their representatives in the Education Department. Unquestionably the Ophthalmological Society could best work the scientific side of the question, but he doubted if much could be effected in this direction in influencing the public, and so the guardians of the young, especially in home studies. But the medical attendant might, if he would only take the trouble, preserve the eyes and health of those under his care. Their work was responsible for a good deal of myopia combined with bad light. There could be no disputing this fact, and they could each and all of them press this important fact on parents, schoolmasters, and such like persons, and by doing this they would prevent the development of lower degrees of myopia in combination with the use of proper glasses.

VIII.—G. J. BULL, M.D.,

Paris

Dr. Bull said, in reply to Mr. Juler's remarks as to the propriety of fully correcting the myopia, that myopia frequently appeared to be greater than it really was by reason of a spasm of accommodation, which might not be relieved even by a few

days' use of atropine. He who gave the glass which appeared to be the full correction would often be giving an over-correction. Unless the glass was placed with its curved surface normal to the line of sight, it produced the effect of a cylindrical lens. The effect of the object being proportional to the number of the lens, it would be greater with the fully correcting glass than with a glass two or three dioptries weaker that would be suitable for reading. If a strong glass was used in spectacles for both reading and distant vision, it would be placed obliquely for one, if not for the other, and the cylindrical effect produced was fatiguing to the accommodation, and might tend to produce spasm and increase a myopia. The distance glasses should be erect, the reading glasses tilted.

IX.—W. J. CANT, M.R.C.S., L.R.C.P.LOND.,

Honorary Surgeon Lincoln County Hospital.

Mr. Cant mentioned a case of congenital myopia in a child æt. 6 months,—10 D. was found. The lens of the left eye slowly became opaque, and at the age of 12 months the cataract was complete. He considered it not advisable fully to correct the myopia in children.

X.—H. BENDELACK HEWETSON, M.R.C.S.,

Ophthalmic and Aural Surgeon Leeds General Infirmary.

Mr. Hewetson regretted that he was not able (being detained in another Section) to hear the papers on myopia. The following facts, however, would be interesting to the Section: A medical missionary—Mr. Harrison—whom he had especially trained, had examined a large number of aborigines in Cook's Isles in the South Pacific as to the prevalence of myopia in a set of people only thirty years removed from absolute savagery. Mr. Harrison found a very large proportion of highly-myopic savages. He (the speaker) also noticed myopia in horses and other animals, especially in horses which shied from an inability to see clearly. These were myopic by the ophthalmoscope.

XI.—CHARLES WRAY, F.R.C.S.,

Ophthalmic Surgeon Croydon General Hospital.

Mr. Wray said cases seemed at times to be congenital; for example, a patient came to the hospital when 4 years of age, with myopia over 17 D., and a large myopic crescent. It was difficult to believe that accommodation had any influence. The principal cases for treatment were those occurring in delicate subjects of tender age, in which through the extensile condition of the fibrous tissues it would be legitimate to suppose yielding of the sclera would ensue under prolonged eye strain at near work. Was there any connection between circulatory obstruction and myopia? Any increase in the circulatory mechanism *pari passu* with the increased demand for it by virtue of the estrangement of the globe? It was desirable in hyalitis with high myopia, to use "Franklins's," to take the strain off the ciliary muscle where a good distant vision was indispensable.

MR. PRIESTLEY SMITH'S REPLY.

Mr. Priestley Smith, in reply, said the errors which accompanied the use of the shadow test in high myopia depended chiefly on the deformity of the back of the eye; the disc stood obliquely, the macula was more distant than the disc, hence it was necessary, for correct estimation, to examine at the macula; but in very high myopia it was practically unimportant to distinguish objectively between, for example, 20 D. and 22 D. His own measurements of 1,000 healthy corneæ proved that the size of the cornea bore no constant relation to the refraction; the average diameter was the same in H, E, and M. There was no evidence that high myopia of the ordinary kind was allied to glaucoma; the tonometer showed no excess of tension, the field was not contracted, the disc was not cupped, and the deformity of the globe was different from that which arose from glaucomatous pressure in young eyes; the yielding of the sclera was more localised. With regard to the correction of low degrees of M., the principle of removing inconven-

ience and preventing deterioration held good. To a school-boy with M. of 1 D., he would say: "Have you any inconvenience? Can you see the black board," etc.? He probably had little or none. Then he would give him no glasses. They would be more plague than profit even for distance, and for reading were unnecessary. But to the parents he would explain the probability of increase, the great importance of strict attention to the amount and mode of study, and would advise that the teacher be communicated with, and that the boy be re-examined in six months. If the M were higher than 2 D., he would give correcting glasses, probably to be worn constantly, certainly to be worn invariably for near work. He would say: "You may wear these all day long; you must wear them whenever you read, or write, or draw, or play the piano." He was very glad to find, from their discussion, that they were agreed as to the national importance of the prevention of myopia. Some recent writers were inclined to minimise it; he believed that such teaching was likely to do serious harm. While resolutions such as that which was about to be proposed to them might in time do good, he was inclined to rely more upon the individual efforts of each one of them in his own neighborhood.

MR. RICHARDSON CROSS, REPLY.

After reference to some special points in the relation of the intraocular muscles to the globe and the importance of successive prolonged convergence of the eyes on the production of myopia, Mr. Cross alluded to the necessity, in these days of severe competitive examination, of giving the eyes every opportunity of doing their work in ease and comfort, and strongly advocated the importance of drawing the attention of school teachers and school boards to the fact that a large amount of myopia was directly due to the want of proper treatment of the eyes during school work and during home preparation. Everything possible should be done to make the lighting of schoolrooms perfect; to insist on a proper attitude of the students while at the lessons, and to see that properly arranged

desks and forms were provided; and to encourage the proper printing of school books. When this had been done it would still be evident that certain eyes could not do the full share of the ordinary school curriculum, and both parents and teachers should realize the importance of seeing that the advice of the oculist was faithfully carried out, whether it were an occasional rest during school hours or the abolition of evening lessons, or absolute rest for six months, or whatever was considered necessary for the eyes. The serious tendency of some short-sighted eyes was also passed in review. But the object of the paper was to try to enforce the interest of the family physician and the public on the whole question, which ophthalmologists had done so much to explain and to evolve.

RESOLUTION.

On the motion of Mr. Bell, seconded by Mr. Wray, the following resolution was adopted: "That the officers of the Ophthalmological Section communicate with the officers of the Ophthalmological Society of Great Britain and Ireland with a view of making recommendations to the Education Department for the control of the increase of myopia in Board Schools.

SELECTIONS FROM AMERICAN MEDICAL JOURNALS.

PRELIMINARY CAPSULOTOMY IN THE EXTRACTION OF CATARACT.

BY T. J. TYNER, M.D., AUSTIN, TEXAS.

Owing to the great amount of literature recently devoted to the subject of cataract extraction, I owe it to you as a matter of courtesy, as well as in justice to myself, to say I would not presume to bring it forward now had I not failed after diligent search to find a precedent for the operation which I shall hereafter describe, and which I believe possesses some merit. The nearest approach to it is in opening the capsule with the point of the knife as it enters the anterior chamber while the section is being made and with which you are all familiar.

The leading point in the operation is in making the capsulotomy the primary step, thereby enabling the operator to deliver the lens at the very moment the corneal section is completed. I will not encroach upon your time with the progressive history of the many methods devised by different operators, nor with the details of this operation as to instruments, antiseptics, after-treatment, etc., as they differ in no essential particular from the generally accepted measures in other methods.

Supposing the eye to be now ready. A Bowman stop-needle is thrust into the anterior chamber—the pupil having been previously dilated—the point of which, and also the entire field of the incision, are in full view.

The capsule is now lacerated in its upper quadrant, the line of incision corresponding to the upper pupillary curve of the

iris. In this manipulation, and in withdrawing the needle, the greatest care should be observed that no aqueous is lost. The eye is now practically undisturbed and as favorable for the corneal section as before, which is to be done quickly, using a Graefe knife, preferably rather broad. When the section is finished, pressure with the flat of the blade causes the corneal opening to gape, when at the same moment counter-pressure with the fixing forceps below aids the expulsion and the lens glides out through the still open pupil with surprising ease."

I will mention here that the lens, having no choice, or rather no other avenue of escape, almost always indicates a tendency to follow the knife as the corneal incision is progressing, and when it is finished the lens is partly in the anterior chamber. I state this to demonstrate why it is so promptly delivered and that the foregoing expression is not extravagant.

The operation is simple throughout and easily done, and is accomplished when the most difficult part in other methods begins. An additional point of interest is: If the lens is susceptible of being dislocated—and this is made manifest so soon as the needle touches the capsule—there is, in my experience, no way to accomplish it so perfectly and harmlessly as with the needle at this stage of the operation. This is somewhat similar to Delgado's method, and, strange to say, was the result in my first case, which occurred last October. Since then I have performed the operation twelve times with a good result in each one, or, to be more definite, with the exception of two cases, the result was far better than that formerly achieved. In the two cases referred to there was severe iritis with posterior synechia, and in four others it was manifest, but only in a very mild form. In the remaining six cases there was absolutely no reaction. I am inclined to think the iritis was in part due to the excessive strength of the atropine used in dilating the pupil, which, a few hours after the operation, reasserts itself, hence crowding the iris nearer the corneal wound. I now use the weakest solution of atropine that will serve the purpose. Eserine might be useful in some cases, though as yet I have not felt the necessity of resorting to it.

I neglected to mention in the foregoing statement that in three of the cases the lenses were extracted in their capsules.

If you will now bear with me a few moments longer, and I trust not without interest, I will relate the circumstances, which by the way were partly accidental, that led up to the development of the operative procedure above described. In July, 1885, I operated on a Mexican, and while I was opening the capsule, having done an iridectomy, fluid vitreous escaped so rapidly that the globe was so collapsed that the lens could only be delivered by the aid of the iris forceps, having fallen into the posterior chamber. Singular to say, there was a good recovery with useful vision, which result encouraged me a few weeks later to attempt the extraction in the other eye. Anticipating the same condition of vitreous, the thought suggested itself to open the capsule with a needle previous to making the corneal section. This was successfully performed, and, while there was loss of vitreous (fluid), it was slight compared to the first. This case is recorded in the published statistics of Texas surgery in 1886. This little procedure passed out of my mind until the discussion became so general in regard to a return to the simple extraction, which later on was adopted by most operators. It was not my wish to give up the iridectomy, but in the mean time, however, I had several cases in which the lens popped out through the pupil just as the section was completed—one in which I have opened the capsule with the point of the knife as it entered the anterior chamber, the patient at the moment the section was finished squeezing the eye. Another case was traumatic, in which the particle of steel could be distinctly seen in the lens, which had thoroughly lacerated the capsule. This was a fac-simile of the preceding case, the fragment of steel coming with the lens. This case, together with others, impressed upon my mind that the lens indicated a tendency to escape, and, as a natural consequence, sought the course of least resistance. Upon this hypothesis I endeavored to make the simple extraction in this way—*i. e.*, by opening the capsule with the point of the knife;

but it was attended by so many failures to make the rapid extraction without injury to the iris that I abandoned it. About this time I recalled to mind the preliminary capsulotomy done with the needle in 1885, which a few months later (after returning from my summer vacation) I put into practice with the results as above given. (*N. Y. Med. Jour.*)

OBITUARY.

HENRY FERRER, M.D. +

As we go to press the deplorable news comes to us through some friends, that Dr. Henry Ferrer, of San Francisco, died after a lingering illness.

He had received his education in Germany and was one of the leading oculists in San Francisco, and although he has not enriched literature to any great extent, his continued labors in the advance of science and knowledge have been well known and appreciated by his colleagues. He was a conscientious worker and a noble hearted man.

My own personal friendship for him, founded at the time of our University life at Heidelberg, makes his loss the more palpable for me.

He was a collaborator of this journal, but his time did not allow him to contribute much.

He leaves a wife whom we tender our sincerest sympathy.

ALT.

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TREATMENT OF HIGH DEGREES OF MYOPIA BY
REMOVAL OF THE LENS.¹

BY DR. FUKALA OF PILSEN-KARLSBAD.

Translated by CASEY A. WOOD, M.D., of Chicago.

In classic works on ophthalmology we read that it is impossible to perceptibly lessen short-sightedness, or to quite remove it.

This doctrine is so commonly accepted that as yet no one has ventured to question in any way what Arlt taught relative to myopia.

And yet it would certainly be a thankful task to be able to diminish, even in a slight degree, extreme short-sightedness which, as Arlt says, is a social affliction and shows itself in all ages, in every station and amongst all nations and in all countries.

Without the least doubt the *long axis* of the eye can not be shortened in any way.

The question naturally arises whether the marked refractive error of an eye with a high degree of myopia can not be reduced in some other way.

¹Graefe's Archiv f. Ophthalmologie, xxxvi, 2.

All efforts to flatten the cornea (Purkinje) have proved delusive. Also the latest experiment by Galezowski to cut out a crescent-shaped piece from the cornea has given no satisfactory result.

I have for many years cherished the idea that it would not be a dangerous undertaking *to remove the lens in young persons, by discission*. For, considering the advantages which highly myopic eyes obtain by being made almost emmetropic as compared with the slight danger to which they are exposed, I found myself impelled by frequent complaints from myopes of 13 diopters upwards to operate in this way upon those cases which I considered suitable.

I have hitherto held that the most appropriate case would be that in which only one eye is highly myopic. I thought, in case my theoretical supposition should also prove practical, that it would be certainly worth undertaking the same operation in bilateral myopia.

For unilateral myopes can never make use of the short-sighted eye except when they have had the misfortune to lose the better eye. In my design I was the more strengthened when I found that another well-known authority upon refraction, Prof. Mauthner, in his classic work (*Vorlesungen über die optischen Fehler des Auges*, 1876, S. 681) expressed the same opinion. Mauthner says in opposition to Donders (who held that a highly myopic eye would not gain much if made aphakic, because the accommodation would be sacrificed): "If I may be allowed I must express quite an opposite opinion. In its optical relations a high grade of myopia would be incomparably better if the lens were not in the eye."

Taking the greatest precautions, I have during the past three years operated upon 19 myopic eyes of 13 diopters and upwards. As I have mentioned at the beginning, I have treated only young people (up to 24 years of age) in this manner, and *only those with relatively good visual acuity who could read Jager No. 1 at their PUNCTUM REMOTUM, and whose fundus presented no choroidal or retinal disease*. On November 8, 1889, I exhibited to the Imperial-Royal Medical Society of

Vienna two patients cured in this way. One was a young woman, æt. 23, with 20 diopters of myopia and one other, a high-school boy of 16, with M. of 13D. Both had comparatively good acuity of vision, and with the exception of small myopic crescents, normal fundis. The improvement of the visual acuity was in the first case nearly twelve-fold. Before the operation $V.=\frac{1}{xxv}$; at the time of the exhibition it was $\frac{1}{x}$; five months later it was $\frac{1}{ii}$. In the case of the young man the improvement was eight-fold; before the operation $V.=\frac{1}{x}$; at the time of exhibition $\frac{1}{v}$; after five months $\frac{2}{iii}$.

ADVANTAGES OF APHAKIA IN MYOPIA.

As opposed to a nominal disadvantage—the sacrifice of the accommodation—may be mentioned the following advantages in favor of removal of the lens :

1. Distinct vision in the distance.
2. Enlargement of the retinal images.
3. Manifold improvement of the visual acuity in the distance.
4. The excessive strain upon the accommodation, and its injurious consequences disappear with the recession of the far point.
5. The injurious habit of bending over work is no longer continued, for work can now be done at a proper distance.
6. Binocular vision for the near which, on account of demands on the convergence, was formerly impossible, is again established.

The spasm of accommodation and the accommodation itself, two disturbing elements in highly myopic eyes, disappear.

It is quite certain that indistinct vision in the distance is the most burdensome grievance of the short-sighted. It is easy to understand, when even a man of Purkinje's ability felt himself obliged to place over night a small sack, filled with a half pound of filings, on his eyes and the next morning felt very fortunate to be able to see distinctly the numbers on the opposite houses. Purkinje had a myopia of $5\frac{1}{2}$ diopters only. One can imagine from this how much greater the affliction of my-

opes of 20 diopters must be. I mention this simply because during the exhibition of the above-mentioned patients, one of the oculists present remarked that it was not the indistinct sight merely, but the choroidal and retinal complications which produced such disagreeable results, and that the same amount of relief could be obtained quite as well by the use of concave glasses as by aphakia.

But concave glasses of 12 to 15 diopters are seldom prescribed and those from 15 to 20 never borne. They greatly diminish the size of objects; they bring about prismatic distortion of images; experience teaches that such myopes complain that the wearing of fully correcting glasses causes dizziness and headache. On the other hand, weaker glasses are of no use to them. Grillparzer tells us in his autobiography (10. Bd. 1879, S. 141,) that he was extremely short-sighted and found himself, when he was 36 years of age, obliged, in consequence of his affliction, to abstain from visits to the theatre, to which he had devoted the greater part of his life work. In spite of his high degree of myopia which, as he writes, caused him many hours of distress, he retained till the time of his death, at an advanced age, relatively good vision. Myopes of a high grade are not fit to do manual labor, because they cannot hold their heads sufficiently near to objects; they do not recognize people on the street and so are exposed to all sorts of unpleasantness. Insecurity on the street and in unfamiliar places belongs as well to these burdensome afflictions.

A short time ago I was consulted by a myope (20 D.) æt. 30 years, who, after passing through the gymnasium, studied theology. Unfortunately, on account of the increase of his previously small amount of myopia, he was obliged to resign and now lives upon the donations of the charitable. The vision of highly myopic persons, when rendered aphakic, is good in the distance; they are able to do both difficult and light work since they can see quite well at the required distance.

The enlargement of the retinal images is a material advantage. It so happens that in the higher degrees — 18 to 22 diopters — correcting concave glasses are no more necessary

after dissection, while with myopes of 12 to 18 instead of concave glasses convex glasses become necessary. The change from concave to convex glasses brings about a great improvement. For strong concave glasses, besides diminishing the size of retinal images, have this effect increased by their distance (12 to 15 mm.) from the nodal point, while convex glasses produce opposite effects.

I succeed in obtaining in all cases, as a minimum result a 4-fold, as a medium result a 7-8-fold, and in one case an 11-12-fold improvement in vision. The visual tests were, as far as possible, made partly alone and partly with my assistant, Dr. Fenzl, before and after the dissection, and I can safely assume, therefore, that no mistakes occurred. I remark here that the visual acuity cannot be properly determined until four to five months after the absorption of the lens, since when tested, immediately after a dissection—just as in the operation for cataract—it indicates only a fraction of its proper amount. In the improvement of vision for the distance lies the greatest benefit which the high-grade myope derives from his aphakia; there is no other remedy, no spectacles, hardly even an opera-glass, can offer a 4 to 10-fold improvement of the visual acuity. It is true that a portion of the improved power of sight must be ascribed to the enlargement of the retinal images, but enlarged images do not suffice to explain *all* the improvement. I quote, for example, Mauthner, who found (l. c., page 186, Table III) that in the case of myopia of 20 D. the relation of the size of objects before and after the removal of the lens is 1:1.33, in the same eye. Indeed, I cannot altogether account for the greater part of the improvement; I can only say that it is founded upon fact and can not be disproved. We understand quite as little about the remedial influence of iridectomy in cases of glaucoma, and we do not on that account dispute the fact. There must be other as yet unexplained causes which, combined with the aphakia, produce the good results. It may be that the experience of others may throw some more light upon this subject.

With the recession of the *p. remotum* there is a restriction of

binocular sight. With a near point at $2''$ — $3''$ a myope of a high grade can not, even for a short time, do any work. Here another gain is made [after discission.] In eyes of unequal acuity of vision, myopes, as a rule, use only the better eye and neglect the weaker one. In consequence of this the acuity of vision falls in the latter, and gradually a strabismus divergens may result. With the restoration of binocular vision the lowering of the visual acuity in the weaker eye is checked and the consequent squint is prevented.

It is commonly acknowledged that long-continued accommodative spasm finally leads to true axial myopia. ("Fuchs' Ophthalmology," 1889, page 683, Mauthner, l. c., page 671, etc.) Many authors, Dobrowolsky, Erisssmann, Schön and others, ascribe to the accommodation a considerable influence upon the increase of myopia. The cause of this lies in increased tension within the hyaline cavity during accommodation. I must, indeed, remark here that myopes of a high grade are never able to make full use of their accommodation. For example, young myopes with M. $\frac{1}{3}$ (13 diopters) and with M. $\frac{1}{2}$ (20 diopters) according to their age, possess considerable range ($\frac{1}{3}$) of accommodation. They at the best accommodate from $3''$ — $2\frac{2}{3}''$, relatively from $2''$ — $1\frac{1}{5}''$. Hardly any one will affirm that the accommodative power in these persons can be called an acquisition. With corrective glasses they may, of course, accommodate from the distance to quite near at hand, but I hardly need to mention that myopes of 13 diopters can not wear fully correcting glasses, by means of which they can use their accommodation for the doing of near work. This would be, as Mauthner (l. c., page 682) expresses it, "unjustifiable," since these glasses furnish such very small retinal images. Without glasses they cannot accommodate and with them they should not; their accommodation is consequently of no use to them. Indeed, if I may be allowed to go still further, in my opinion the accommodation in high degrees of myopia is injurious in consequence of the heightened pressure in the vitreous, because it plays a not unim-

portant part in the increase of the myopia. Coccius,² as early as 1852, established experimentally this effect of the accommodation. Von Graefe made the same observation in the year 1854, when he found venous pulsation during accommodation. Heinrich Müller expresses himself in the same way. Arlt also writes of the increased pressure in the vitreous during accommodation, as does Iwanoff. Hensen and Völckers prove the same thing by direct experiment. They found that during the act of accommodation the choroid moves forward; this movement causes dragging on the blood-vessels, exudation and subsequent increased tension in the vitreous. The numerous researches of Schön, continued for many years, are of the greatest importance. He claims that simple and inflammatory glaucoma, as well as cataract, are the consequences of strain of the accommodation. After all these explanations one may affirm with confidence that myopes of a high grade lose nothing, but on the contrary profit something by removal of the accommodation power³. Finally, I may say that young people with aphakia *do really* possess a certain amount of accommodation. I operated two years ago on a boy, æt. 16 years, (both eyes) for zonular cataract. He now reads with correcting glasses—+10 D.—Jäger No. 2. Although these observations, first published by Förster, were, as is well known, denied by Donders, Woinow immediately after, by means of his careful experiments, proved undoubtedly that people with aphakia really possess a not unimportant amount of accommodative power.

THE RULES WHICH I HAVE FOLLOWED TO AVOID THE DANGERS AND ACCIDENTS OF DISCISSION.

It is true that, among other things, discission may be the cause of iritis or irido-choroiditis, through excessive swelling of the lens. Although I may not communicate anything new,

²Anwendung des Augenspiegels, 1853, S. 74.

³For the above quotations see references in foot-notes at page 237, Graefe's Archives, xxxvi, 2.

I shall proceed to show that all the dangers of discission can be successfully combatted. To prevent the danger of violent swelling I always make a small cross-cut in the capsule so as to determine the amount of swelling which I may, later on, expect in the lens. If this prove small I repeat the discission after a day or so, and later on as often as appears necessary. In some cases it happened that there were lenses which swelled immoderately, even though I had made a very small incision. The first two cases, in spite of this, progressed very favorably as the patients (histories Nos. 1 and 14) had no pain and no ciliary injection. I did not feel called upon for any further operation.

Where, on the other hand, signs of irritation, pain or photophobia, present themselves, I occasionally do a paracentesis corneæ, hitherto always under chloroform, so that I should not be prevented from carrying out the operative details by pressure of the lids and by the pain which it caused.

When I wished to proceed with all confidence, particularly in persons who possessed only one useful eye, and when the patient or his parents allowed me to do so, *I performed an iridectomy upwards before the discission*. This former is the surest means we possess against an increase of tension, and with ordinary precautions the iris cannot heal in the wound. The disadvantage of the disfigurement cannot be compared to the security which the operation gives; besides this the coloboma is covered by the upper lid. As is well known von Graefe has (*Archives of Ophthalmology* V., 1st. part, page 181) testified to the excellence of this procedure, and in cases of discission for soft cataract has designated it as his "favorite method." Henceforth I am determined to treat every case of a high grade of myopia in this manner, especially individuals over 12 years, as these are just the cases that cannot bear severe swelling of the lens. Iridectomy is at the same time an excellent precautionary measure against attacks of iritis and choroiditis. Von Graefe writes in the same paper (page 179): "The inflammatory irritability of the iris can be lessened by incision of the sphincter, and it cannot take as dangerous a turn as without iridectomy."

Of the other possible accidents following discission should be mentioned suppuration of the wound and secondary cataract. The former has not happened since I began to irrigate the conjunctival sac with a 1,5000 solution of mercuric chloride before each discission. After the operation I allow the patient to lie down for half a day, place a bandage on the eye and take care that the pupil is thoroughly dilated with atropine. To the last mentioned precaution I attach the greatest importance. So that large pieces of it may not remain I have endeavored to cut the lens freely in the later stages, as, according to my experience, membranous secondary cataract is very difficult or impossible to remove by discission. In this way I always obtain a black pupil.

Concerning corrective glasses in aphakia, I have found that in myopia of 15—16 D. the emmetropic condition resulted. In the same way a myope of 10 D., when rendered aphakic, would be hypermetropic about 6 D; in M. 12 D. H. of 4 D. would result, while in myopes of more than 16 D., say of 20 D., there remained M. of 4, D. These calculations I have proved in practice to be correct.

I must mention still another advantage gained in these cases of aphakia. High grade myopes, operated on in this way, are ever after secure from the ills of cataract and (after correctly performed iridectomy) glaucoma. For, Donders tells us (*Anomalies of Refraction and Accommodation*, page 202, 307 and 338) that the above-mentioned diseases more frequently affect myopes of a high degree than they do emmetropes.

OPERATIVE (EXTRACTION) APHAKIA IN ELDERLY MYOPES.

Since discission is not practicable in elderly people, the lens must be extracted. There are not many cases recorded in literature where the clear lens has been removed by extraction. The transparent lens must be extracted or else it must be ripened beforehand. As yet I have never performed this operation; still I believe that with the advances made in the

present day the extraction of the clear lens in high-grade myopia will yet yield the best results. In every case I would advise an iridectomy. Von Graefe mentions in the *Archives* (IV, 2nd part, page 175) such an extraction preparatory to the later removal of a cysticercus from the vitreous. The operation was a complete success. Von Graefe, in this connection, expressed the opinion that in such cases a "complete emptying" is to be expected since, when the lens is completely transparent, the resistance (to extraction) is least in the neighborhood of the capsule.

The following are the accounts of 19 cases treated by discission, and of four others still under treatment. It must be remembered in this connection that when one finds a comparatively low degree of myopia in children, it may be confidently expected that as the years go by, the ametropia will increase rather than decrease in amount. All cases had a normal ophthalmoscopic appearance, the crescents being small or at most $\frac{1}{3}$ of a pupillary diameter—wide. On this account I have, for the sake of brevity, said nothing about them in these reports. Atropine was used in making all the examinations.

1. Franz Z., in Vienna, 8 years old, right eye emmetropic; left myopic 11 D.; $V = \frac{18}{cc}$ or $\frac{1}{x_1}$. On April 3, 1887, discission. Small cross-cut; no swelling. On April 6, repeated discission, larger cut; decided swelling; in a week the lens lay at the posterior aspect of the cornea; no pain, no ciliary injection, tension normal; cold bandages often during the day for a week. Absorption normal after three months. A year later the pupil was clear. Vision with +6 D. $\frac{2}{v}$, consequently a four-and-a-half fold improvement.

2. Hermine B., of Vienna, 14 years old; right eye emmetropic, left myopic 11 D.; vision $\frac{1}{xiv}$; discission July 3, 1887; normal course; discission repeated five times: vision a year later with +6 D. $\frac{20}{L}$; five-and-a-half fold improvement.

3. Heinrich S., 15 years; pupil of the high-school in Vienna; right eye M. 12 D.; vision $\frac{1}{x}$; November 30, 1887, iridectomy upwards; after this discission seven times; normal

course but with moderate flow of tears, for which reason I changed the dressings often and kept the eye well atropinized. A month after absorption of the lens, vision $2/v$. Since then I have not seen the case.

4. Katherine K. from Pilsen; 15 years; left eye, November 1, 1888, M.15D.; vision $1/x$; discission nine times. After the fourth discission some pain in consequence of a cold, which, after four days and the use of cold bandages, disappeared. Eight months later with +1.25D. vision $1/ii$.

5. Same person; right eye M.14D.; V.= $1/x$; discission on May 10, 1889, repeated eight times; vision, after five months, with +1.50D., $2/iii$. May, since then, have become much better. During the healing, strabismus divergens appeared, for which reason I performed the operation for squint with good results.

6. Franz B., in Pilsen; 15 years. Both eyes myopic 12D.; vision $1/x$. On February 25, 1889, discission, left eye, which was repeated nine times; normal convalescence; September 5, vision $1/v$ with +4.50D. At present vision $2/iii$; therefore an eight fold improvement.

7. Rudolph S., 10 years old. Right eye M.13D.; vision $1/v$; December 23, 1888, discission six times repeated; tedious absorption of lens. On March 14, 1889, paracentesis corneæ. April 8, pupil black; vision $1/v$; October 10, 1889, vision $1/ii$.

8. Left eye of the same boy, M.14D.; vision $1/v$. Discission on March 20, 1889. Slow absorption of the lens. After the fifth discission, on May 8, 1889, paracent. cornæ. Thread-like cataractous remains across the pupil were at the eighth discission divided, after which a black pupil. Vision, $2/v$ on October 10, 1889, with +2D.

9. Klementine B., 22 $\frac{1}{2}$ years old; teacher in Potschau. Both eyes myopic 20D., vision, $6^{ss}/cc$ =ca. $1/xxv$. On July 28, 1889, discission, repeated twelve times. After a cold, slight irritation set in (pain and ciliary injection) but no exudation; cold applications for three days; vision, on November 8, 1889, $1/x$; at present with -5.5D., vision, $1/ii$; hence ten to twelve-fold improvement.

10. Left eye of the same person. On November 12, 1889,

discission, repeated nine times; normal convalescence; vision with $5\frac{1}{2}$ D., at first $\frac{1}{x}$.

11. Karl H., 14 years. Both eyes myopic 14D.; vision, $\frac{1}{x}$; December 12, 1889, discission in right eye, repeated eight times. Usual course. On April 20, 1890, with +2.5D. vision $\frac{2}{vii}$.

12. Left eye of the same boy, December 20, 1889, discission, repeated eleven times. On April 20, 1890, vision $\frac{2}{vii}$ with +2.5D. I await with certainty a greater improvement in vision of both eyes.

13. Emma H., 9 years, from Carlsbad. Both eyes myopic 13D. V.= $\frac{1}{xiii.3}$. Slight cloudiness of cornea. On August 4, 1889, discission, left eye. After a week severe swelling of lens; paracent. cornæ on August 24; convalescence after this normal. October 10, 1889, capsular remains needed; after this a black pupil. V. on December 20, $\frac{1}{x}$.

14. Otto S., 10 years. R.E. emmetropic. Left myopic 10D. V.= $\frac{1}{x}$. Strabismus divergens. November 13, 1889, discission. Profuse swelling of lens, but without pain or symptoms of tension; discission twice, later. Normal absorption. April 19, 1890, with +7.D. V.= $\frac{2}{iii}$, a seven-fold improvement. Operated for strabismus on April 19.

15. Joseph P., 8 years. R.E. emmetropic. Left myopic 10D. V.= $\frac{1}{x}$. October 5, discission, repeated nine times. Progress normal. April 20, 1890, pupil black; with +7.D., V.= $\frac{2}{v}$.

16. Wilhelm S., 11 years old; both eyes myopic 12D. V.= $\frac{2}{vii}$. On December 23, 1889, discission, left eye; repeated eight times. April 5, with +5.D., V.= $\frac{2}{iii}$. I am about to operate on the second eye.

17. Franz S., 12 years; large congenital coloboma of iris and choroid in both eyes. Myopic 12D. V.= $\frac{1}{xxx}$. December 4, discission of the left lens, repeated twelve times. April 25, 1890, with +4.D., V.= $\frac{1}{x}$, and is certain to be better.

18. R.E. of same boy. Discission on February 19, 1890, repeated eight times. The inferior bow-shaped border of the unabsorbed lens torn by saw-shaped cuts with the discission needle and a large pupil resulted. Vision can only be determined later.

19. Auguste R., aged 23, formerly could see equally well with both eyes. Eight months before ran a sewing needle into his right eye. This caused great pain for which he used cold applications and was given atropine. In three months he could barely distinguish light with this eye. February 4, 1890, I found in the enlarged pupil some capsular remains which prevented a view of the fundus. After this history I expected violent swelling of the lens and consequent increase of intra-ocular pressure. L.E. myopic 20D.V.= $\frac{1}{v}$. I did not care to undertake this case, but at the repeated requests of the patient, and on account of his complaint that he was incapable of doing any work, on February 5 I made a wide iridectomy upwards. February 12, discission—a very small cut. Very little result. After that, on February 16, repeated slight discission. Upon this there was much lenticular swelling; no pain but feeling of tension, and photophobia; cold bandages and rest in bed. When the symptoms were relieved I made a paracentesis corneæ under chloroform, as I was hindered by the photophobia. March 1, another paracentesis corneæ, as the anterior chamber had between times filled with lens matter. The result was very good. April 28, pupil rather clear. In the anterior chamber small flocculi. Patient reads words of Jäger, No. 15.

ADDENDUM—FOUR EYES STILL UNDER TREATMENT.

20 and 21. Joseph Rz., 11 $\frac{1}{2}$ years. Myopic, both eyes, 15D.V.= $\frac{1}{v}$. April 2, 1890, iridectomy both eyes, under chloroform. April 10, discission right. Slight swelling; discission repeated six times. April 14, discission of the left, repeated four times. Both lenses swollen satisfactorily.

22 and 23. Antonia G., 24 years old; both eyes myopic 13 D.V.= $\frac{1}{x}$. April 27, wide iridectomy both eyes.

Upon the further progress of these cases I shall give a later report.

[I am indebted to my associate, Dr. Wm. F. Smith, for the following note, hitherto unpublished, of a case in which he extracted the clear lens for high myopia. This publication is not intended to establish a prior claim to Dr. Fukala's operation, but is made with the idea that possibly other Americans may have had cases of high myopia in which resort has been had to operative interference. In 1880, an Irishman, æt. 35, a book-keeper, presented himself for treatment. He had a myopia of $1\frac{1}{2}$ (20 D.), his far point being 2'' from the cornea. The right lens was extracted by the flap operation without iridectomy and came away entire. With $-\frac{1}{8}$ or $\frac{1}{7}$ (-5 or -6 D.) he had, three months after the operation, vision of $\frac{20}{\text{xxiv}}$ minus and was able to do book-keeping. The left lens was not disturbed.]

INTERSTITIAL KERATITIS.

BY CHARLES H. MERZ, A.M., M.D., SANDUSKY, OHIO.

The following history will serve to illustrate a class of cases with which the physician is frequently brought into contact. While there is nothing unusual in the method of treatment, the case, owing to its advanced stage and severity, may prove of interest.

On August 28, Miss G., æt. 20 years, was brought to my office at the suggestion of her attending physician. She was suffering from almost total blindness, having perception of light only, and was unable to see any object that was even directly in front of her. She had been under treatment for some time, her physician having used atropine and various other mydriatics in his efforts to improve her vision.

Upon examination, the entire cornea of each eye was found to have undergone an inflammatory change, but there was no tendency to ulceration or to the formation of pus. The corneæ presented a cloudy, ground-glass appearance, the pupils and irides being hidden entirely from view. The opacity had assumed a yellowish-red appearance. There was intense photophobia, lachrymation and considerable pain—especially in the supra-orbital region and back of the eye. In addition to this, the ocular conjunctiva was very much congested. Upon oblique examination, there were found numerous minute blood-vessels formed in the tissue of the cornea, giving the "salmon patch" of Hutchinson. The history of the case was that both eyes had been attacked simultaneously. Upon examination with the ophthalmoscope, flakes of blood could be detected in the anterior chamber of both eyes and the aqueous humor proved to be turbid.

The case had been treated by various astringent washes without any perceptible improvement in vision or photophobia. The history of the case was carefully studied and the conclusion reached that the cause was a constitutional, specific one. The teeth were small, the nose-bridge sunken and the upper central incisors were notched on the edges. The family history was difficult to obtain and threw no light on the case. In this connection, the statement of Nettleship led to the confirmation of the diagnosis:

"I have found other personal evidence of inherited specific trouble in 54% of my cases of interstitial keratitis, and evidence from the family history in 14% more—total 68%, and in the remaining 32%, there have been strong reasons to suspect it. Treatment was commenced by instillations of cocaine and atropine 4% and the following formula:

R	Hydrargyri bromidi,	-	-	-	gr. j.
	Kalii iodidi,	-	-	-	5iij.
	Ammon. iodidi,	-	-	-	5jss.
	Tr. gentianæ comp., q. s. ut ft.,	-	-	-	5iv.

Sig.: Three times a day take one teaspoonful in water.

Improvement was very slow, but marked. After a week of this treatment, finely powdered iodoform was dusted into the eyes twice a day, and hot fomentations used morning and night. At the expiration of the second week I prescribed the hypophosphites with ol. morrhuae and a pill of quin., ferrum et nux vom. The hot fomentations and the iodoform were continued. Improvement was now more marked. The corneæ had become much clearer and she was able to see a figure standing before her. The pain and lachrymation lessened. She was again placed upon the iodides and a solution of eserine gr. i to 5j dropped in the eye night and morning and atropine (gr. iv-5j) at noon. During this time the patient took her daily exercise and morning sponge bath with the use of the flesh brush. Under these hygienic measures her general health and nutrition became very much improved. In addition to using smoked glasses, she was kept in a room shaded from direct light.

At this time, after six weeks of this plan of treatment, the patient has required almost normal vision. All pain and discomfort have disappeared, but there remain still one or two minute opaque points on the corneæ but they are not over the pupillary area, and consequently do not interfere with the vision. The general health of the patient has returned to its normal standard.

Two facts in the case are of special interest. The first is the short time required to effect a cure—the usual time being six months or a year. This is attributed to the free use of hot water and iodoform. The power of hot water in removing inflammatory products is well known. The water was used on compresses as hot as it could be borne. The iodoform was finely powdered and dusted freely. The hyperæmia induced by the mechanical irritation of iodoform undoubtedly assists in removing the inflammatory products.

The second point is the large percentage of cases in which a constitutional or inherited specific trait enters as a factor. In every instance in the writer's observation, interstitial keratitis has been traced directly to this source. Each case will require its own special treatment, but in general indications the mercurials and iodides with tonics should be freely administered, and the use of hot water, iodoform, eserine and atropine persisted in. This case is remarkable for the speedy recovery that followed the use of these remedies.

LACERATION OF THE INTERNAL RECTUS.

BY J. J. M'ACHRAN, M.D., SALT LAKE CITY, UTAH.

Mr. I., æt. 20, came to my office in June with an outward and upward deviation of the right eye. He gave the following history: Two weeks previous while fencing with a companion he received a thrust from a foil armed with a small button at the point in the inner canthus of the right eye. He had at the time of receiving the wound called on his physician, who told him to tie it up and that it would be all right, notwithstanding he saw double at the time. The conjunctiva had healed with a sinking of the caruncle.

Under cocaine, I opened the conjunctiva and found no trace of the attachment of the internal rectus. It had been completely severed from its attachment to the globe. The inferior rectus was partially lacerated, and hence let the eye turn upward.

With Prince's pulley stitch I secured the internal rectus and thus corrected the outward deviation. He still saw two objects, one lower than the other, or rather one-half of objects with the right side drawn down.

Thinking the inferior rectus would regain its original power I left it untouched. I brought the conjunctiva together with a number of stitches and bandaged the eye with moist boracic compresses. The pulley stitch was removed on the third day. The internal rectus had taken a good hold, as seen from its power to rotate the eye inward. The globe still deviated upward. I then began to exercise the inferior muscle with the use of prisms and in fourteen days he saw objects as natural as ever, excepting while running, the ground would "turn up," as he

expressed. But the trouble has disappeared and his eye is as useful as ever.

The most remarkable circumstance of this case is how an object the size of the button ($\frac{3}{8}$ in. in diameter) could be forced through the conjunctiva between the globe and inner wall of the orbit without lacerating the lids or the globe; neither of which it did.

CORRESPONDENCE.

CAPSULITIS PURULENTA ET HÆMORRHAGICA.

HALIFAX, N. S., November 8, 1890.

EDITOR AMERICAN JOURNAL OF OPHTHALMOLOGY.—In the April (1890) issue of your journal I reported a case of capsulitis purulenta et hæmorrhagica, which occurred in the New Amsterdam Eye and Ear Hospital, New York. It was prophesied at that time that the dense gray membrane which filled the pupillary area would yield to an after-operation and good vision be secured. I am pleased to report that our expectations were fully realized. On May 22, after the eye had completely recovered from its inflammatory condition, Dr. Pooley performed the after-operation which was called for.

An incision was made in the lower outer segment of the cornea with a Beer's knife which was passed in so as to perforate the membrane at its center. The opening thus made was enlarged outward and the incision carried through the sphincter border of the iris. After the withdrawal of the knife Tyrell's hook was inserted and the opening in the membrane somewhat enlarged. No vitreous was lost, and a speedy recovery followed without an untoward symptom. The patient was discharged in a week with vision $\approx^{20}/_{LXX}$ with the proper glasses. On September 23 she returned to be examined for glasses, with the following result: L.V. $\approx^{20}/_{XL}$ with +11 D.s. \odot +4 D.c. ax. 15° . Reads figure No. 1 at $10''$ with +14 D.s. \odot +4 D.c. ax. 30° . Considering the notes essential to a complete history of the case, I forward them to you.

Yours truly,

E. A. KIRKPATRICK, M.D.

SELECTIONS FROM AMERICAN MEDICAL JOURNALS.

SOME REMARKS ON THE RELIEF OF REMOTE NEUROSES, BY THE RESTORATION OF OCULAR EQUILIBRIUM.

BY F. ALLPORT, M.D.

The subject of ocular insufficiencies and over-sufficiencies appears to be one of those crazes that occasionally strike the medical profession with cyclonic force. Like cyclones, these crazes are unexpected in their attacks and frightfully devastating while they last. Their careers are shortlived, but they leave many aching hearts behind to tell the story of over-credulous patients and over-zealous physicians.

We can learn but little, it is true, without experimentation, but in the name of suffering humanity, there should be some limit placed, beyond which the pitiless drug or knife of the medical man may not leave its mark.

What a multitude of mistakes must be laid to the demon of "reflex" action, who, like a fitful spirit, flits hither and thither in our human anatomy, and ever and anon lays his icy hand upon some one of our organs and claims it for his own. How quickly the medical profession grasps at the hint. Immediately a long chain of diseases is looked upon from a different standpoint. Women are ruthlessly laid upon the operating table and castrated. Children are circumcised; teeth are extracted and noses are cauterized. In short, the abiding place of "reflex neuroses" may be found in any organ of the body,

and is liable to an invasion by ignorant zealots. Meanwhile the physician is in a hopeless state of bewilderment. The commonest diseases assume a mysterious appearance, and he fears the presence of the lurking "reflex" behind every muscle, nerve and tissue in the body. It matters not whether a patient complains of his eyes or not, clip, clip go the scissors, and his muscles are severed. It matters not if the child's prepucce utters a note of warning. Off it comes. It matters not whether the woman ever complains of her ovaries. Down she must lie and in a twinkling they are laid on the table beside her, and the surgeon imagines he has achieved a signal triumph, especially if he can show that he has made a great many such operations in a very short space of time.

Why do not physicians conscientiously narrate to us the ultimate results of these cases, upon which they base such wonderful reports? Because they are ashamed to do so! After they have tried them for a time, and the results are finally forced upon them, they simply quietly lay away their hobby and say nothing about their conclusions. But does it teach them a lesson? Unfortunately no! They are ready for the next visionary dream of some over-zealous enthusiast, and are soon deep in the mysteries of the latest "reflex." Where and when will this insane chasing of a will-of-the-wisp cease? How many of the crippled, the maimed, the halt and the blind must be arrayed before us like the ghosts of Richard's victims, before we are contented to inoculate our practice with a little common sense? The answer is as visionary as a "reflex neurosis." But it is to be hoped that the time is not far off; that the day of our salvation and the salvation of our patients is at hand.

One gleam of sunshine I have been able to extract from the general gloom, has helped me over many a dark place. It is this: Never attack an organ, unless that particular organ is causing distinct uneasiness. If an organ is diseased to an extent sufficient to warrant interference, it will usually make its pathological condition evident.

The latest candidate for the approbation of the medical men,

is the influence exerted upon the nervous system by insufficiencies and over-sufficiencies of the ocular muscles.

The subject of tenotomies for ocular insufficiencies is not a new one. But the subject of graduated tenotomies for ocular insufficiencies, and their effects upon the different organs of the body, is comparatively a new one. Tenotomies have, until recently, meant a complete cutting away of the tendons from the eyeball, and this has referred more particularly—almost exclusively, I may say, to insufficiencies of the internal recti muscles. To Dr. Stevens, of New York, is to be given the credit of having elaborated the subject of graduated tenotomies and advancements, for the relief of reflex and remote diseases, and of having called attention to other varieties of insufficiencies, beside those of the internal recti muscles. To Dr. Stevens must also be given the credit of having systematized this entire subject, and of having given us an exact and intelligent nomenclature. His methods of operating are of the very best, and are of such a nature as to make them valuable to every ophthalmologist. His instruments for operating are as near perfection as they can be made, and his phorometer renders the detection of insufficiencies easy and systematic. His claims to cure headaches, head neuralgia, etc., will find sympathy, approbation and acquiescence from all ophthalmologists. But his claim to relieve general chorea, epilepsy, paralysis and other grave and remote neuroses by graduated tenotomies, is so extreme as to warrant the unfavorable verdict rendered by almost the entire profession. His claims were so broad, and his personal statistics so surprising, that it became necessary for the profession either to accept or reject the grounds upon which he stood. Therefore the New York Neurological Society determined to thoroughly and impartially investigate the subject. Accordingly in March, 1887, with the acquiescence of Dr. Stevens, a commission was appointed, consisting of Drs. Seguin, Starr, Birdsall, Moore, Weber, Dana, and Foster (the two latter being appointed by Dr. Stevens himself), to consider the value of Dr. Stevens' treatment. This commission was not compelled to bring in a report at any specified date. This was

left to themselves. They were requested to bring in their report whenever they had arrived at a conclusion. They were merely asked to consider the subjects of chorea and epilepsy, these being the subjects upon which Dr. Stevens laid the greatest stress, and in which he claims (without, however, substantiating his claims by intelligent statistics) to cure 50% of all cases submitted to his charge. A preconcerted plan was agreed upon that was undoubtedly fair to all, by which patients were placed under Dr. Stevens' care, and observations of progress taken from time to time. This plan appears to have been carried out honestly by the members of the commission, although claims to the contrary were advanced by Dr. Stevens. The total number of cases sent to Dr. Stevens for treatment was 28; 23 were epileptics; 5 cases of chronic chorea, and all had some form of insufficiency. Fourteen of these cases withdrew for various causes: 5 were unable to attend regularly; 2 were declined by Dr. Stevens because of organic disease; 5 were withdrawn by mutual consent of the members of the commission sending the cases and Dr. Stevens, for satisfactory reasons, such as non-attendance, etc. Three were discontinued because they grew worse instead of better under the treatment; [makes 15. ED.] hence only 14 remained and became available for observation. These cases were under treatment for periods varying from several weeks to 30 months, and the result showed that no cases were cured. One case was much improved, 5 cases improved, 7 cases unimproved, and the result in 1 case was unknown. From these results it will be seen that 6 cases were claimed to be improved; 3 of these cases were from Dr. Stevens' own private practice, and no exact notes of their previous condition were available. In 5 cases the improvement was very slight; the sixth case was an epileptic who did about as well under Dr. Stevens' treatment as under the bromide treatment. Some of the patients were made worse instead of better, and in some diplopia and vertigo were developed.

Such in brief was the result of the investigations of the commission appointed in March, 1887, and which reported in November, 1889. Their labors appear to

have been carried on in a spirit of honesty and fairness. They declare that inasmuch as Dr. Stevens has utterly failed to achieve the great results he claimed, this method of treatment is not worthy to be classed among the principal agents for the cure of chorea and epilepsy. This appears to have been agreed to by even those members of the commission selected by Dr. Stevens himself; Dr. Dana (one of Dr. Stevens' friends) even going so far as to say, that while when he entered the commission he was prejudiced in favor of this method of treatment, the result of his observations had been to make him lose faith in its efficiency. One remarkable fact is, that Dr. Stevens reports to have cured 50% of the cases of epilepsy and chorea submitted to him in his own private practice. He further claims that the cures materialized promptly; but the commission reports that no cases were cured, and there were practically only 3 cases that made even doubtful improvement, and the course of improvement in them all was protracted.

The fact of the matter is, Dr. Stevens appears to be enthusiastic and very zealous in his investigation of this subject, and has arrived at a point where he claims too much and where his claims have no reasonable hope of being sustained by a fair and impartial examination. If he merely advocated the use of this remedy for headaches, head neuralgias, etc., he would have many endorsers, but as it now stands the breadth of his claims is only equaled by the members of the profession who are his open antagonists. Notwithstanding the fact that the commission was appointed with the acquiescence of Dr. Stevens, and that the commission and Dr. Stevens labored together for a period involving $2\frac{1}{2}$ years, Dr. Stevens, at the meeting in November, 1889, brings in a protest against the reception of this report by the Society. If he did not wish to work with the commission he should have said so at the start; if he wished to object to the method in which the commission was prosecuting its labors he had ample opportunity to do so. But he accepted the cases that were sent to him (with the exception of the 14 that were rejected), and treated them

presumably to the best of his ability, and it would seem as if he should stand by the results. He even has the poor taste to vent his spleen by unjust and personal allusions to the members of the commission, and it is gratifying to learn that such allusions were passed by in dignified silence by the Society, the personal character of the members of the commission being sufficient guarantee against bigoted animosity cutting any figure in its labors. It appears to me that if such neuroses are dependent upon a lack of ocular equilibrium, Dr. Stevens, with the immense labor that he has put upon the subject, the undoubted information he has acquired, and the great skill that he unquestionably possesses, should be able to achieve exact results, and that successful operations, directed against these conditions, should be positive and rapid in their consequences and not protracted and unsuccessful.

For my part I have little faith in graduated tenotomies. I believe that if a muscle is worth tenotomizing at all, the operation should be complete, and that an absolute separation of the tendon from the eye-ball should be brought about. In Dr. Stevens' method the tendon is picked up by a pair of fine forceps and the middle fibres are cut, leaving the two lateral margins of the tendon intact; this looks well in theory, but according to my observation does not materialize in practice. The fibres that are cut are supposed to fall back and become attached to the globe at another point. I do not believe that this is the case. I believe that the fibres fall back during the operation, but in a short time thereafter, in the course of healing and cicatrization, the fibers pull back to their original place of attachment. This statement I have repeatedly verified by observations, upon the human being and animals, by first making graduated tenotomies, and, after a while, reopening the conjunctiva and carefully observing the condition of affairs. Dr. Stevens himself, I understand, sometimes finds it necessary to repeat this operation from 15 to 20 times on a single person. If this is the case, and some of his cases are under observation for $2\frac{1}{2}$ years without achieving decided results, it would appear to me that the operation should be condemned and a search

made for some new remedy. I believe there is a great deal of nonsense in the subject of ocular insufficiencies and tenotomies, when presented in its most favorable aspect, and it appears to me that almost all of the hundreds of cases that I have examined by Dr. Stevens' phorometer have had some varieties of muscular insufficiency. To summarize then: I believe that errors of refraction and ocular insufficiencies are a fruitful source of headaches, head neuralgia and other neuroses, situated in and about the eyes and head. I believe that such diseases can be remedied by the proper adjustment of glasses and by proper tenotomies. But I do not believe that chorea, epilepsy and other remote neuroses are produced by errors of refraction or by muscular insufficiencies, except as such abnormalities indirectly cause an impairment of the general health, which might in its turn present a favorable soil for the growth of the various neuroses. I have but little faith in graduated tenotomies, and believe that if a tenotomy is indicated at all, the complete operation is necessary.—*J. A. M. A.*

NEW TESTS FOR BINOCULAR VISION.

It frequently becomes a matter of importance to ascertain the presence or otherwise of true binocular vision as an index of the efficiency of treatment in squint, to decide the advisability of "correcting" both eyes when these are greatly dissimilar in refraction, and, indirectly, as a means of detecting attempts at malingering, or to determine the existence or absence of monocular blindness. One of the simplest experiments is to hold a pencil midway between the eyes of the patient and a printed page, perpendicularly to the lines of type. This presents no obstacle to the reading if binocular vision is present, but in the event of its absence portions of the page will be obscured by the pencil. The ordinary prism tests, Hering's drop experiment, and the various exercises with the stereoscope are familiar methods for obtaining the same object.

The effect of lenses in changing the form of retinal images has been studied especially by Donders, Stellwag and Knapp, while binocular metamorphopsia produced by correcting glasses was the subject of a capital paper by J. A. Lippincott, published some eighteen months ago. In this research Dr. Lippincott (*New York Medical Journal*, September 27, 1890), came to the following conclusions, which we quote from this most recent communication upon this subject, and the applications to which his experiments have led:

"1. A + spherical placed before one eye makes the corresponding side of a rectangle appear higher than the other side.

"2. A — spherical makes the corresponding side appear lower.

"3. A + cylinder, vertical, *increases*, whereas a + cylinder,

horizontal, lessens the apparent height of the corresponding side.

"4. A — cylinder, vertical, lessens, whereas a — cylinder, horizontal, increases the apparent height of the corresponding side.

"5. A + cylinder, axis pointing upward and outward, before either (and still more decidedly before each) eye makes the top of a rectangle appear narrower than the bottom, while if the axis points upward and inward the top appears wider.

"6. Minus cylinders, axis upward and outward, increase; whereas those with axis pointing upward and inward lessen the apparent relative width of the top.

"7. Binocular vision is necessary for the production of optical metamorphopsia. Hence the lens must not be so strong as to make the image sufficiently blurred to be incapable of fusion with that formed by the other eye, for in that case the blurred image is suppressed mentally and monocular vision thus practically established."

Inasmuch as the appearances just quoted can be demonstrated in all eyes without regard to the character of their refraction, provided true binocular vision exists, Dr. Lippincott has employed these phenomena to replace the ordinary stereoscopic tests. In fact, to quote his own language, " they are stereoscopic tests with the stereoscope left out." For the purpose of practical application Dr. Lippincott advises that a + 2 cylinder, vertical, be held before one eye, while a twelve-inch-square card is placed at the ordinary reading distance, and the patient asked to describe which of the two sides is higher. As a control test, the cylinder is now turned with its axis horizontal and the card again viewed. That side which in the first place appeared higher now seems to be lower than the other. So instead of a + cylinder a — cylinder, first with its axis vertical and then with its axis horizontal, may be employed ; or the glass may be held with its axis oblique before the eyes. The ease and rapidity with which this examination can be made, and its undoubted accuracy in so far as a proof of true binocular vision is concerned, commend it as a very time-

saving method. Concerning its application to the detection of the presence or absence of monocular blindness, it may be said, as Dr. Lippincott has pointed out, that if the results are negative they demonstrate only the absence of stereoscopic vision, but do not prove the presence of monocular blindness. They none the less, however, could be employed as a control test in association with the other methods which usually depend upon the prevention of the sound eye from seeing, or in the case of malingering, upon the prevention of that eye which is claimed to be sound from seeing.

No very satisfactory explanation of these phenomena has ever been given, although in the opinion of the author of the test that one put forward by Dr. John Green most nearly solves the problem. The writer, discussing the apparent distortion of objects viewed through lenses, points out that as we learn to see things as they are through an education of the sense of vision, when the data upon which we have learned to rely are suddenly changed, illusions are apt to be evoked requiring a correction of the judgment in accordance with the new conditions.—*Univ. Med. M.*

CASE OF SYMPATHETIC INFLAMMATION AFTER PANOPHTHALMITIS OF THE INJURED EYE.

BY S. C. AYRES, M. D., CINCINNATI.

A paper read before the South-Western Ohio Medical Society, October, 1890.

The study of sympathetic ophthalmia, in all its phases, is now, and always will be, one of intense interest to the specialist.

This disease, so insidious in its approach, so persistent in its course, and so fatal in its results, is always to be dreaded. Statistics show that not only punctured and incised wounds and foreign bodies within the globe, but cataract extractions, perforations of the cornea and sclera from idiopathic inflammation not due to traumatism, are now well known to be both the direct and remote cause of sympathetic ophthalmia. It was formerly taught that suppuration of the globe, or panophthalmitis, was a bar to the development of sympathetic trouble in the fellow eye. Attempts were even made to produce suppuration in order to place the sound eye in as safe a condition as possible. But as observations have been more accurate, the fallacy of the above theory has been demonstrated. Statistics from reliable observers are not wanting to show, beyond a doubt, that panophthalmitis of one eye does not prevent the development of sympathetic inflammation in the other. The aggregate of such cases is not great as yet, but observations are slowly accumulating, and the fact as stated in relation to panophthalmitis, is now well established.

In the light of the present day, it is surprising to read in Berry's work, published recently, that "when an inflammation, even though produced by micro-organisms, is excessively se-

vere, and results in purulent destruction of the tissues, as in a case of panophthalmitis, the lymph channels become obliterated, and the danger of further transference of organisms averted. The immunity thus given by panophthalmitis, a clinical fact which has long been observed, is explained without too much stretching of this hypothesis."

Noyes, on the contrary, in his excellent book says that: "panophthalmitis does not preclude the possibility of sympathetic effects."

Dr. Wecker, in his *Ocular Therapeutics*, says: "The destruction of the intra-ocular nerves by suppuration would offer a perfect guarantee if only there could be any certainty that all the nerves, the termination of the optic included, had disappeared. Although the stumps of eyes which have suppurated may be considered as the least dangerous, they cannot be looked on as above suspicion, and therefore any treatment which should attempt by artificial suppuration to secure an eye from sympathetic inflammation, ought to be condemned as radically bad."

In the *Archives of Ophthalmology* for 1876, Dr. Alt has collected from various sources 110 cases of sympathetic inflammation. In his conclusions he says it is worth mentioning that in thirteen of the cases where eyes were enucleated for sympathetic irido choroiditis, the other had been lost by panophthalmitis purulenta.

In the *Royal London Ophthalmic Hospital Reports* for 1887, is an article on "Sympathetic Inflammation of the Eye-ball," by Gunn, in which he reports the results of the examinations of forty-seven cases which were enucleated in that institution. They are carefully classified as to age, cause and character of injury, interval of sympathetic manifestation, the final condition of injured and sympathizing eye, and the effects of treatment. In this valuable and exhaustive article, he states, among his conclusions, that in three cases panophthalmitis preceded the development of sympathetic manifestations. In the first case the injured eye was enucleated, and a few days later sympathetic inflammation developed in the fellow eye.

In the other two cases panophthalmitis followed cataract extraction, and in both sympathetic ophthalmitis developed within a few weeks.

In view of the importance of this subject, I have taken the liberty to present a case which has come under my observation, where sympathetic trouble followed panophthalmitis.

Mary Dixon, æt. 8, was injured the last week in December, 1888, in the following manner: She opened a window and a strong wind was blowing, and dust or some other substance struck her left eye, causing slight pain. As she closed the window, a portion of one of the panes broke, and it is not certain whether a fragment of the glass penetrated the eye or not. Two days later she had a chill which was followed by an eruption, and violent inflammation of the eye set in, and she had suppuration of the globe. What this eruption was is not certain, but she has some scars on her forehead which very much resemble varioloid. The eye was quite painful for several days, but slowly subsided, and the eye is now very much shrunken. About four months after this suppuration, the vision of the right eye began to fail. The evidences of this were a slight cloudiness in distant vision, and an inability to recognize things which she could see clearly before. This gradually increased, especially during the month of October, when her vision became very much impaired.

Upon examination the right eye was found in the following condition: The iris was adherent to the lens and presenting an irregular and knotty appearance from masses within the stroma of the iris; the pupil was filled with a dense secondary membrane, and the vision was reduced to counting fingers with difficulty at three feet. There was some tenderness in the ciliary region, and tension was diminished. The stump of the right eye was not sensitive, and there seemed to be no urgent reason for its removal.

The relief of the inflammation was the most important point to be gained, and from my successful use of poultices in such cases, I let her return home with instructions to use poultices regularly every day, and report progress. It was my intention

to make an iridectomy, but I wanted to wait until the eye would be in a suitable condition. An iridectomy made during the active progress of a plastic iridocyclitis is usually negative in results, owing to the fact that the coloboma is soon closed with lymph. She went home with instructions in relation to treatment.

In March I enucleated the stump. It was very much shrunken and collapsed. The right remains as it was, so far as vision is concerned. There is no tenderness in the ciliary region. In all probability the lens will become opaque in time and can be extracted.

SOCIETY PROCEEDINGS.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Thursday, October 16, 1890, Henry Power, F.R.C.S.,
President, in the Chair.

INTRODUCTORY ADDRESS.

On taking his seat as President of the Society, Mr. Power paid a graceful tribute to his predecessor in the chair, Dr. Hughlings Jackson. He referred to the address delivered by Mr. Hulke on a former occasion, which included a sketch of the wonderful developments and improvements in ophthalmology within that eminent surgeon's immediate knowledge and observation. Looking back through the past year, there was no startling discovery to be recorded. There were, however, ample fields for work. Much still remained unknown in the pathology and treatment of such diseases as sympathetic ophthalmia, white atrophy of the disc, and conical cornea. Glaucoma, acute and chronic, was still not fully understood, and the best method of operating in cataract, and of treating secondary cataracts and detachment of the retina were not yet agreed upon. Mr. Power made a brief allusion to the papers and works on ophthalmology published during the past year both in this country and abroad. He congratulated the Society upon the award of the Middlemore prize to two of its members. After referring to the large and increasing membership of the Society, he urged upon those who were intending to take up this branch of medical science the importance of a thorough preliminary training, both general and medical,

GRAEFE'S LID SIGN.

Dr. Sharkey read a paper based upon the results of an investigation he had made in his out-patient room at St. Thomas' Hospital upon 613 cases. He said: The questions I set myself to answer were: 1, What views do others hold as to the value of the lid sign? as a matter of fact, is it always present in Graves' disease? 2, Is it always absent in health and in other diseases? In reply to the first question, reference to the literature of the subject showed that Graefe himself in 1864, describing the sign as the absence of correspondence between the movement of the lid and the elevation and lowering of the visual plane, considered it pathognomonic, and so particularly important in the earliest stages of the affection. Subsequent writers have recognized the importance of the symptom, but do not consider it pathognomonic. My own experience is that it is often absent in Graves' disease. But is it always absent in health and in other diseases? No one seems ever to have deliberately set about answering this question. And yet on an answer to it mainly depends the importance of the symptom. Among the 613 cases of diseases of all kinds examined, 12, or a little less than 2 per cent., presented it well marked. Many others had it so long as they stared at the object held before them; and it was difficult to prevent them from doing so. A large proportion of healthy people can voluntarily produce the lid sign in themselves by staring. Inasmuch, then, as Graefe's lid sign is far from always present in undoubted cases of Graves' disease, and is often very well marked in others who certainly have not Graves' disease, it cannot be considered very valuable as a diagnostic sign. What is the cause of Graefe's lid sign? It is clear that there is overaction of the muscles which raise the lid, namely, the levator palpebræ, supplied by the third nerve, and the unstriped muscle of the lid supplied by the sympathetic. Remak showed that irritation of the sympathetic produced elevation and retraction of the upper lid; and the fact that one can voluntarily produce this shows that it can likewise be effected

through the third cranial nerve. Constant active spasm rarely results from irritation, though intermittent spasm may. Prolonged spasm most frequently owes its origin to paralysis or weakening of opposing muscles. Is there evidence in Graves' disease of a weakening of the muscles which close the eyes? Stellwag has shown that a very constant symptom of the disease is diminished frequency and incompleteness of the involuntary closure of the lids, which goes on so continuously in health. The orbicularis palpebrarum, which effects this movement, and is the opponent of the muscles which raise the lid, being weakened in Graves' disease, and losing tone by inaction, the healthy equilibrium of the muscles of the eye is lost, the opening overpowering the closing muscles, and producing retraction of the upper lid and Graefe's sign. Thus the infrequency of winking, which Stellwag refers to disease of the centre, is the primary result of disease, and retraction of the lids and Graefe's sign follows as a consequence. This appears to me to be the most satisfactory explanation of the lid sign.

RECOVERY FROM GRAVES' DISEASE.

Mr. Lawford read notes of the case of a female, æt. 43 years, who ten years previously had been seriously ill with all the usual symptoms of exophthalmic goitre, and had been under treatment at a London hospital for some months. She slowly recovered, and had been for the last nine years in good health, but liable to bronchitis. She attended as an out-patient at St. Thomas' Hospital for conjunctivitis, and it was then noticed that there was marked proptosis, but no other signs of disease; the eyelids were normal in position and movement; the thyroid could not be felt, and there was no cardiac trouble. The patient herself stated that the protrusion of the eyes had not diminished since they became prominent during her acute illness; but with this exception she knew of no symptom left by the attack.

Dr. Hughlings Jackson referred to a series of cases collected

by Mr. Roxburgh, but not published, in which exophthalmos occurred without the other symptoms of Graves' disease. It was important to know that the disorder might pass off, as in the case reported.

Mr. Poulett Wells referred to a case of Graves' disease in a woman whom he had seen at Moorfields. She had all the usual symptoms and signs well marked, and rapidly improved after treatment by iron and bromide of potash.

Dr. James Anderson had met with cases that recovered, but in them there remained considerable pigmentation of the skin. He thought it would be found that Graves' disease, like glycosuria, included a great number of different conditions. At the present time several groups of symptoms were recognized, cardiac, goitrous, ocular, and changes of disposition, which were not often all present in the same subject. Graefe's symptom was often encountered, but was not sufficiently constant to be pathognomonic.

Dr. Sidney Coupland thought that if the retraction of the upper lid were due to spasm of the levator palpebræ, induced by the lack of opposing force in the orbicularis palpebrarum, it was unlikely that the symptom would occur during the act of staring.

Mr. McHardy spoke of the extreme rarity of necropsies upon cases of Graves' disease. He also called attention to the occurrence of alopecia areata in these patients. He had met with it in three, in two of which it was associated with considerable pigmentation of the skin.

Dr. Sharkey briefly replied to the remarks made upon his paper, and further explained his reasons for the views he had enunciated. In the act of staring there was preponderance of action of the levator palpebræ, although the orbicularis palpebrarum might be normal. In Graves' disease the preponderance of the levator muscle was due, not necessarily to its over action, but to diminished power in the opposing orbicularis muscle.

PARALYSIS OF BOTH EXTERNAL RECTI, WITH CONTRACTION OF
THE INTERNAL RECTI.

This communication by Mr. Donaldson (Londonderry) was read by the Secretary. J. K., æt. 70 years. When about 50 years old the eyes began to turn in, and the deviation slowly increased for about ten years. The eyelids generally remain almost closed, as shown in a photograph, but can be partially raised by the action of the occipito-frontalis. Both eyeballs are rotated inwards and a little downwards, so that the outer margin of each cornea is barely visible at the inner canthus. The deviation is rather greater in the right eye. The movement of the eyes is extremely limited. Perception of light is retained, and the patient complains that a bright light is painful to her. Her general health is good; there is no other paralysis, and no sign or history of rheumatism, gout, syphilis, alcoholism, or injury is obtainable.—*Brit. Med. Journ.*

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THE DIFFERENTIAL DIAGNOSIS BETWEEN
TRACHOMA AND FOLLICULAR CON-
JUNCTIVITIS.

BY H. V. WÜRDEMAN, M.D., OF MILWAUKEE, WISCONSIN.

There are two diseases of the conjunctiva which are characterized by the formation of granules in this membrane and which are often confounded under the name of "granular lids." The one occurs, as a rule, in childhood, is amenable to treatment and is but a slight affection. The other is an infectious disease, occurring indiscriminately in children or in adults, is difficult to eradicate and if left to itself may even destroy the eye.

Yet the innocent follicles of follicular conjunctivitis are often stigmatized by the term applied to the roughened lids of trachoma. Hence epidemics of "granular ophthalmia" in our schools and institutions have been reported by one physician where another would have diagnosed the greater majority as cases of follicular conjunctivitis. In the examination of a number of our Milwaukee schools in which are a great num-

Read before the Fox River Valley Medical Society, at Neenah, Wis., November 28, 1890.

ber of children of foreign parentage, I found but few cases of trachoma, while the follicular disease was relatively common. In this region trachoma seems to be much more prevalent than in other parts of this country, probably on account of our large foreign population. Both these diseases occur in ill-fed and anæmic individuals who live or work in poorly ventilated or unhygienic rooms and surroundings, but trachoma attacks all ages and conditions while follicular conjunctivitis is essentially a disease of the young or anæmic. The negro, however, is markedly exempt from trachoma, though many examples of the follicular affection may be found. In the course of four years attendance at two of the charitable institutions in Washington as assistant in the eye clinics where there was a large negro attendance, I can call to mind but two or three cases of undoubted trachoma in this race.

"Trachoma embraces a variety of infectious conditions whose characteristic is hypertrophy of the conjunctiva either in disseminated spots or diffuse, accompanied by the occurrence in the membrane of distinct granules of various sizes and which may or may not be accompanied by inflammation."¹

These granules are small, rounded, yellowish masses consisting of lymphoid and connective tissue cells surrounded by a fibrous capsule. They resemble masses of frog spawn and are embedded in the adenoid tissues of the conjunctiva and are surrounded by a vascular network. The conjunctival tissue is hypertrophied and rough, hence the name trachoma (*trachys*, rough). The disease is chronic in its nature and during its entire course and in all of its forms is infectious. For practical purposes it may be termed acute and chronic.

In acute trachoma there is great swelling, great hypertrophy, severe pain and a watery discharge, similar to the first stages of gonorrhœal ophthalmia, from which it is to be differentiated by its history and by the fact that in this disease at the early stage, the cornea is seldom implicated, while in the latter this structure is soon affected. Follicular conjunctivitis is never so

¹Noyes, "Diseases of the Eye," 1890, p. 315.

severe even when acute. This condition in the course of several weeks merges into the chronic form with lymphoid infiltration.

Two forms of chronic trachoma may be distinguished. In the one, on everting the lids we find little sago-like bodies, the size of a millet seed, lying beneath the conjunctiva principally upon the upper lid at the retrotarsal fold. These give rise to but little irritation and are accompanied by slight hypertrophy of tissue. This condition may be aptly termed follicular trachoma. (See Fig. 18).

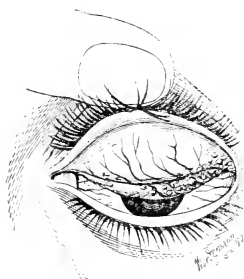


FIG. 18.—FOLLICULAR TRACHOMA.

The second form is characterized by the occurrence of the trachoma bodies accompanied by great hypertrophy of tissue, either diffuse or limited to the neighborhood of the granulations. As a rule, the surrounding conjunctiva is greatly roughened. This condition is called trachoma with lymphoid infiltration.² (See Fig. 19).

This form ultimates in grave changes in the lids and in the conjunctiva itself, producing a vascular opacity of the cornea which is caused by the mechanical irritation of the roughened lids (Fig. 20 A). Cicatrices follow the absorption of the granules and in old cases the conjunctiva is full of scars. The

²Id, p. 318.

cartilages of the lids become curved and distorted so that eventually trichiasis and entropion are produced. If so far the cornea has escaped danger from the roughened conjunctiva, it soon becomes opaque from the friction of the eyelashes and cicatrices, unless relieved by an operation, (Fig. 20 B). In old cases but few trachoma bodies may be seen.

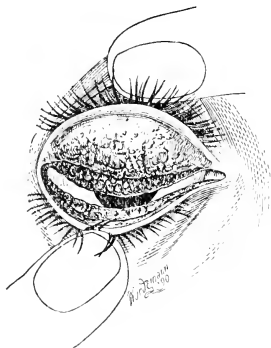


FIG. 19.—TRACHOMA WITH LYMPHOID INFILTRATION.

In all forms of this disease a great number of micro-organisms are to be found in the secretion, which is highly infectious, producing in other eyes the specific infection and causing suppuration in other parts of the body. Medical attendants or midwives who are themselves afflicted with this complaint, are themselves responsible for many cases of puerperal fever. I call to mind several instances of this affection in the persons of nurses and medical men who seem to have more than their share of this class of cases. The exciting cause of trachoma is supposed to be a diplococcus. In the examination of a large number of cultures I have noticed a number of organisms:—a diplococcus, as figured by Michel,³ a bacillus

³Arch. of Ophth., 1886, p, 452.

about half the size of the bacillus tuberculosis but differing from it in the manner of growth, etc.; the pyogenic, the saprophytic and other forms. Pure cultures were obtained in several instances of the first two from the original inoculated.

The other disease that I have to discuss is characterized simply by follicular enlargement without hypertrophy of the

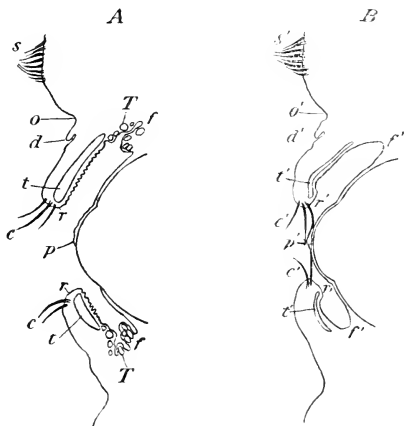


FIG. 20.—DIAGRAMMATIC SECTION THROUGH THE LIDS AND EYEBALL.

[Adapted from Fuchs.]

A from a case of short standing; *B* from an old case. *A* shows the two forms of hypertrophy; *B* the results of absorption of the granules; *s, s'*, supercilia; *o, o'*, sulcus between brow and lid; *d, d'*, fold of lid; *c, c'*, cilia in proper position; *c'*, cilia turned against the cornea; *r*, free edge of lid, the upper and lower lids parallel, with sharp inner edges; *r'* free edge of lid bent backward, the inner edge rounded; *t*, tarsal cartilage, swollen through infiltration and covered by velvety conjunctiva; *t'*, tarsus atrophied and distorted, covered by smooth membrane; *f*, fornix, with many trachoma bodies, *T*, in the fold of the conjunctiva; *f'* fornix, smooth, without folds; *p*, thick pannus, covering the upper half of the cornea; *p'* shrunk pannus, covering the whole cornea.

surrounding conjunctiva, and is accompanied, as a rule, with but little irritation. These follicles appear as whitish-pink or yellowish, prominent, half round or oval, translucent elevations above the conjunctival surface. They are commonly found near the outer canthus and generally only on the lower lid, although sometimes a few may be seen along the retro-tarsal fold. The follicles of Krause are also implicated, but are not alone affected, as the disease sometimes extends beyond their locality. These follicular swellings are about the size of a pin's head and are usually arranged in rows. The disease is essentially chronic and is supposed to be due to malarial infection.¹

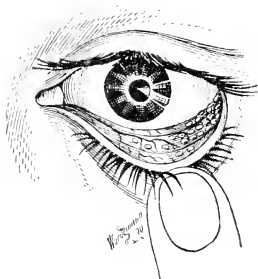


FIG. 21.—FOLLICULAR CONJUNCTIVITIS.

It sometimes follows acute catarrhal conjunctivitis and has been reported from the prolonged instillation of atropine solutions and other collyria. Pannus or any other sequelæ like those of trachoma never result from this affection. It tends to a spontaneous cure upon the restoration of the health or the approach of the vital periods. Follicular catarrh is supposed to be non-contagious. In the examination of a

¹Fuchs, *Augenheilkunde*, 1889, p. 55. Schmidt-Rimpler, *Augenheilkunde*, 1889, p. 436.

number of cultures made from the secretion of the disease I only found the micro-organisms obtainable from any eye in which the conjunctiva was not in a state of perfect health.

To recapitulate, the principal points of variance are: Trachoma is a strongly contagious disease, whose sequelæ and complications are dangerous to vision and the safety of the eye. Its progress is ever from bad to worse and treatment is always prolonged and tedious.

Follicular conjunctivitis is a mild affection, feebly or non-contagious, and is attended by no dangerous complications. It tends to spontaneous cure and resolution quickly follows proper treatment. The granulations of trachoma are larger, less prominent and more yellowish, and their edges are less distinctly defined than are the granules of follicular catarrh. Cicatrices and pannus are never found in the latter disease at any stage, while their occurrence is the inevitable consequence of the former.

In but few cases may the diagnosis be in doubt, still, for instance, follicular catarrh may be accompanied by considerable inflammation of the membrane and simulate acute trachoma, however, the progress of the affection will soon reveal its true nature. Again, both diseases may exist together in the same eye, then the condition should be called by the name of the more grave complaint and measures taken accordingly.⁵ From this condition, which is not uncommon, the two diseases have been almost universally confused by American and English writers under the term of granular lids, the authors asserting that follicular catarrh is but a mild form of trachoma, although in recent text-books there seems to be some disposition to keep them apart.⁶

A recent writer upon the subject of trachoma, states: "By many its recognition is considered so easy that the flippant diagnosis of granular lids is made to cover errors of refraction, intra-ocular troubles, simple, catarrhal and purulent

⁵Fuchs, *Augenheilkunde*, p. 89.

⁶Noyes, *Diseases of the Eye*, p. 317. Nettleship, et al.

conjunctivitis, corneal ulcerations, inflammation of the iris, and in fact it is confounded with almost every trouble to which the eye is subject; standing as a scape-goat in eye troubles, as a convenient appellation of malaria does in general diseases."⁷ From experience I am forced to agree with the writer.

Other diseased conditions may be mistaken for trachoma, but they are fortunately rare, and they are even more dangerous for the safety of sight. One of these is lupus, and another is tuberculosis of the conjunctiva. In both instances the formation of symblepharon occurs and in the latter tubercles may be found as good-sized elevations upon and in the conjunctiva. The constitutional symptoms and microscopic examination will further the diagnosis.

⁷Barton Pitts, M.D., "Trachoma," Amer. Journ. Ophth., April, 1890.

DIFFERENTIAL DIAGNOSIS OF OPACITIES IN THE EYE.

Some Mistakes Common to Such Writers as Loring, Mauthner, Schmidt-Rimpler or Clayborne.

BY DAVID W. STEVENSON, M.D.,
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Loring, who has probably written the best work in English on the Ophthalmoscope, gives a chapter (p. 184) to the above subject. In order to save the reader looking up, I will number some of his quotations which we consider untenable. Referring to Mauthner's delicate test with the corneal reflex he states:—

1. "The visual line of the observer will pass through the centre of the reflex and also through the centre of *motion* of the observed eye. These two points will, therefore, act as fixed points, and *always* lie in the visual line of the observer."

2. "If the reflex covers the opacity, notwithstanding the various movements of the eye, then the opacity must lie at the very centre of the eye."

3. Allowing the above to be true, Mauthner decides the relative position of opacities on the axial line in retinitis pigmentosa, and Loring suspects the relative position of the minute spot in high myopia.

4. J. Herbert Clairborne, in his neat and excellent little work on the ophthalmoscope, makes the ridiculous statement (hardly excusable in this age of exact ophthalmoscopy) on page 33: "Whenever the ball moves, the lens moves with it, and any point situated on the posterior surface of the lens moves with a corresponding point situated on posterior surface of the ball—*vice versa* anterior."

Most observers in thus using the ophthalmoscope, standing 2 feet off, move their own heads, instead of having the patients move their eyes (which they would do in an irregular jerking fashion). It must, therefore, be plain when the patient keeps his eye still, that the *center of rotation* has little or nothing to do with the *relative* movement of opacities. To illustrate, place 3 or more pins in a small board, or rather stick them into a paper matchbox so that their heads will be one-half inch apart and all in a line. In this experiment it will soon be seen that it does not signify whether the box is moved or the observer moves as far as the relative movement of the pins is concerned. If the furthest pin is looked at (that is its image is fixed on the fovea), the other pins will appear to move in concert in one direction. The nearest pin appearing to travel the fastest, *their relative rate of movement will be as the images move across the retina.*

If the middle pin is *fixed on*, the farther pin or pins will appear to move with the observer, while the nearer will move against him. The one the eye fixes on will not appear to move at all. It will thus be seen that all the movements are only apparent and relative. To better illustrate this in regard to the eye, let the ordinary objective convex lens (say 3-inch focus) be fixed on the box before the pins. The nearer the pins are to the focus the more enlarged they appear, but the same law will be seen to hold good, except if one of the pins is placed beyond the focus; it would then act as if myopic. This pin would then form an inverted image in front of the lens. It would thus act in *relation* to its movements as if it was the nearest pin. A still greater myopic would act as if a little further from the observer. Now, as to the eye, I believe most observers fix on the inner edge of the iris. Therefore this becomes the point of fixation. Of course the observer can fix on a leucoma, or on anterior or posterior cataract, but probably he can't tell where the posterior cataract is situated. If he fix on a retinal vessel he ought to know the refraction. I may state that the centre of rotation is never fixed on, because there is nothing to fix and even if there was, there would be no way of knowing

it except by having some form of fixed ophthalmoscope. The patient's head would have to be immovable and the line of sight controlled by cross-wires as in a theodolite or Javal's ophthalmometer. In this way it might be possible to fix the centre of rotation when the patient's head is perfectly immovable. But this would be of no practical value.

Now, as to the corneal reflex which we believe if its relative movements are understood will be of practical scientific value. It will be a surprise to those who have not noticed it, what a small and distinct image is formed by the anterior convex surface of the cornea acting as a mirror. It appears to be near the plane of the iris, it being virtual and erect. The formation of the corneal image is as shown in Fig. 22. As will be seen in

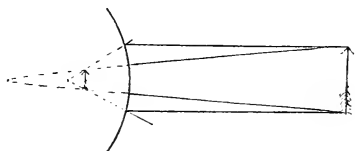


FIG. 22.

Ganot's Physics, with parallel rays the principal focus is approximately at the centre of the radius of curvature. I also quote from Ganot (p. 494) two of the simple laws in regard to mirrors. (a) The angle of reflection is equal to the angle of incidence. (b) The incident and reflected ray are both in the same plane, which is perpendicular to the reflecting surface.

Suppose an observer with a small, plane mirror with a perforation (the ordinary ophthalmoscope mirror will give as good results) reflecting parallel rays of light as those from the sun into the eye. From the above laws the observer's eye, the small image and the *centre of curvature of the anterior corneal curve* are all in the same line, because they are all in the normal to the tangent plane of the cornea. To this it may be

objected that the cornea is not a sphere (Landolt, p. 117). But for all practical purposes it may be considered so. As an *axiom* we may state that *the centre of rotation for the corneal reflex is the centre of the anterior corneal curve*. The radius of the front surface is 7.7 mm. (Noyes, p. 2). This point lies just posterior to the lens, less than $\frac{1}{2}$ mm. from it. (Landolt). Therefore, a very slight deposit on the axis of the posterior capsule would always act as centre of rotation for corneal reflex or image. An opacity anterior to this would move against the reflex or observer, while of posterior just opposite or with the observer. Loring states (this is the fourth error on page 187):

5. "The delicacy of this test in regard to the lens depends on the fact that the centre of motion is not really in the centre of the visual axis, but, according to Donders, 1.77 mm. behind."

I asked one of the best ophthalmologists of Chicago the reason. He claimed that a posterior cataract would make more movement in the same direction than an opacity in the vitreous and that the centre of rotation being further back made it more apparent. It seems to me it would have just the opposite effect. If two objects are a certain distance apart the nearer they are the centre of rotation, their relative position can be more easily told. His idea being the same as Loring's in regard to the corneal reflex, his statement that he could diagnose between opacities in the vitreous and lens by a swifter movement in the lens I must sincerely doubt. The delicacy of this method really depends on the fact that the centre of the corneal curve is so very near the posterior capsule. If this *method* was to receive a name it would be well to give it the name Keratascopy so unfortunately given by Cuignet to the shadow (light) test or retinoscopy. It may be said that by the direct method, the refractive difference would give the differential diagnosis between the lens and the vitreous opacities. But I never heard of one who claimed he could decide. We believe this *method* of the corneal reflex contains a great truth.

A CASE OF MALIGNANT FIBROID OF THE ORBIT.

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The patient, a full-blooded negro, æt. 19 years, came Nov. 6, 1890, to the clinic of the Richmond Eye, Ear and Throat Infirmary. He had a growth protruding from between the lids of his left eye. This growth had made its appearance about nine months before, the patient being then 18 $\frac{1}{2}$ years of age. The negro said that in July, 1890, the growth had been partially removed, not entirely, for he had been told that a small piece of it still remained. Since July the tumor had grown so rapidly that the day the negro came to the clinic it completely filled the interpalpebral space, and the eyeball could be seen only by raising the upper lid. Examination of the tumor showed that it consisted of two parts, an encapsulated central part and its prolongations along the conjunctiva and subconjunctival tissue of the lower cul-de-sac. The encapsulated portion was about the size of a hickory nut, and opening from the orbit below the eyeball, which it pressed upward and backward, and the movements of which it greatly hindered. The lower half of this central part protruded from between the lids and pressed so firmly against the inner canthus that the caruncle could not be seen. The prolongations from the surface of the main body of the growth had completely filled the lower cul-de-sac of the conjunctiva to within a few mm. of the outer canthus. The channel of growth for the tumor had plainly been the conjunctiva and subconjunctival tissue of the lower cul-de-sac; for though these were so infiltrated and thickened that they protruded from between the lids, neither the cutaneous surface of the lid, nor the conjunctiva, for a dis-

tance of 4 or 5 mm. from the margin of the lid, showed any sign of tumor infiltration. The eyeball was perfectly healthy; so was the upper half of the ocular conjunctiva and the conjunctiva below immediately adjacent to the cornea. Centrally below, however, were seen running from the tumor to the edge of the cornea perhaps half a dozen small blood-vessels; these were all within a space of 6 mm. breadth. The surface of the tumor was red, rough, and, in places, warty, and was covered with a copious, dirty, purulent secretion. The tumor, though not painful in itself, was very sensitive to the least pressure, even when made through the lids.

Under cocaine, a small portion of the tumor was removed for microscopic examination, and patient was told to return in two days. The microscopic examination was unsatisfactory.

On November 8, the patient returned. The growth was perceptibly larger than it was two days before. The band of conjunctiva in which, November 6, were seen the small blood-vessels that extended from the growth to the corneal margin, was now a band of tissue, corresponding exactly in appearance with the main tumor surface. This band reached to the edge of the cornea, and there seemed to bend on itself. The eyeball was, except for the attachment of this band to it, perfectly healthy, and the question arose whether or not it should be sacrificed in the attempt to remove the tumor. The rapid growth of the tumor made it a matter of first importance that it should be removed, if possible, in its extremest prolongations. To do this it would be necessary to remove the whole of the lower half of the ocular conjunctiva, the whole of the conjunctiva of the lower cul-de-sac and of the lower lid and of the orbital tissue, an amount to be determined only by removal of the tumor. Although it seemed highly probable that no part of the tumor had attacked the periosteum of the orbit, this could not, on account of the size and immovability of the outer half, the non-capsulated part of the tumor, be certainly determined. Thus a large part of the covering of the eye would have to be taken away, and it was thought best to remove the eye with the tumor. An external canthotomy was

done; then the conjunctiva of the upper half of the ball was cut as in an enucleation, and then the tendons of all the muscles except the inferior rectus were cut. The nerve was next severed, and then the eye and the tumor were turned out of the orbit from above, after which no trouble was had in removing the growth in what seemed its entirety. The main body of the tumor had the following measurements: From above downward, 32 mm., length, 25 mm., from before backward, 15 mm. The lower two-thirds of this part were enclosed in a thick connective tissue capsule, and thus separated from the surrounding tissues. The outer part of tumor which sprung from the main body had no definite capsule, but had grown along the inferior cul-de-sac, growing forward and outward, and showing no tendency to spread into the deeper tissues of the orbit. The tumor was found to be nowhere adherent to the eyeball, save by the band extending to the corneal margin. This band, however, proved to be thicker than it had appeared to be. The negro, who was a sailor, came to the clinic to have his eye dressed only for four days, after which time he joined his vessel, and I have been unable to learn whether or not there has been any return of the growth.

The tumor presented several interesting points. In the first place, what was its true nature? I have ventured to call it a malignant fibroid, because though I made many sections, some of which were prepared with the single, others with the double staining method, I was unable to find anything that would allow me to name it otherwise. Some of the sections proved in part to consist entirely of bands of fibrous tissue and of individual fibrillæ, with no cells. Other sections showed a fibrous tissue basis infiltrated with great quantities of very small round cells, such as are seen adjacent to the epithelial prolongations in cancer.

Parts of other sections consisted of small round cells, though these were much larger than those mentioned above. Nowhere could I find definite spindle cells, nor epithelial nests, nor could I make out anything that could be taken for epithelial prolongations. Possibly we have to do with a fibro-sarcoma,

since part of the growth showed quantities of cells which had definite outlines, and which were numerous in proportion to the lack of the fibrous tissue basis. It is highly probable that the tumor was originally purely fibrous in character; the microscopic examination points to this, and also the fact that the main body of the tumor, though springing from the orbit, was completely isolated by a dense connective tissue capsule from the surrounding tissues. If a sarcoma, the age of the patient, 18 $\frac{1}{2}$ years, is to be noted. The willingness of the tumor to grow along the inferior cul-de-sac, where the sub-conjunctival connective tissue has a certain degree of looseness, and its slowness in attacking the conjunctiva where it is bound down more closely, as at the cornea and the margin of the lids, seem to point to the sub-conjunctival connective tissue, rather than to the conjunctiva itself, as its channels of growth.

If, as is highly probable, the tumor was a fibroid of the orbit, it shows what may be expected where after operation for the removal of such tumors, a part of growth has been left behind.

TRANSLATION.

SUCCESSFUL TREATMENT OF TWO CASES OF BUPHTHALMUS.

BY DR. STOLTING, OF HANOVER.

Translated by Casey A Wood, M.D., of Chicago.

What might generally be meant by the above title is, that as a result of treatment, some degree of visual acuity finally remained, but I wish it to be understood that in the two cases whose histories are here presented the result was, so far as could be determined in the case of children of tender years, a complete and permanent cure with the retention of very good vision. In the very nature of things, when the enlargement of the eye has reached a certain degree, it can never return to its normal size. We must, then, be content with bringing about a diminution of the corneal diameter, and with it a permanent reduction of the intra-ocular tension.

The first of these patients, Max B., æt. 7 months, came under my care on December 6, 1888. The peculiar redness and the lack-lustre appearance of the left eye had attracted the attention of the family physician. The well known picture of the smoky cornea and the pericorneal injection led me to try the ocular tension, especially since an enlargement of the eye in this case made me all the more suspicious that a glaucomatous process was at the bottom of the trouble. There was increased tension. There was at this time nothing abnormal to be made out on the right side, except a slightly increased corneal enlargement. The family history of the little patient fur-

nished nothing of importance; both parents and an elder sister had perfectly healthy eyes. More distant relatives had had no ocular affection which could in any way be connected with the case under discussion. To please the parents I tried the usual medical treatment for ten days. Then I did a sclerotomy, first on the left and afterward on the right side. The wound in the left eye healed without incident, but prolapse of the iris occurred on the right side in the nasal portion (counter puncture) of the sclerotomy wound. This prolapse did not take place at the time of the operation, but came on three days later, its first indication being a pear shaped distortion of the pupil. It gradually increased in size during the first few weeks, but has now ceased to grow, remaining about as large as half a small lentil.

I was for the first fortnight in doubt as to the result of the operation, as during that time the tension fluctuated and was mostly increased. Henceforth it became normal and had so remained until date—a period of 18 months.

The second case, Alfred K., was less promising. The child was two years old, and the disease, of long standing, had brought about a very decided enlargement of the eye. The tension of both globes was considerably increased when I first saw him. The cornea was smoky; the child was very restless, and seemed to be mentally deficient. An upward sclerotomy was immediately done on both eyes, the left February 16, and the right, February 20, 1889. Tension was at first greatly decreased, but soon rose so high that the smokiness of the cornea re-appeared, and I felt obliged to repeat the operation on both eyes, March 6, and 19, respectively. I might mention, *en passant*, that I noticed during the progress of this case something which, it appears to me, has an important bearing upon the theory of the therapeutic action of sclerotomy. The higher the tension rose after the first operation the more the pupil (it was best seen on the right side) presented a bicornuate distortion toward the two scars. The periphery of the iris was in this manner gradually drawn away, and this not while the anterior chamber was wanting but after it had been

completely restored to its normal depth. The phenomenon can be explained in only one way. There must have been an escape of fluid through the recent cicatrices. This is rendered all the more probable by the fact that after the second operation and the decrease of tension, this distortion of the pupil disappeared and did not return.

The final result was, as above indicated, in every way satisfactory.

The decrease in the size of the cornea seemed to me a most remarkable occurrence, and is, moreover, mentioned by almost all observers.

While in case I, with the exception of the prolapsed iris in the right eye, there was nothing remarkable to be seen, and although the left eye (apart from the very moderate corneal enlargement—12 mm.) would be pronounced a normal one by every oculist, with the second case it is different. The ocular changes in this case are still such as to indicate the ravages of the disease. The corneal diameter measures 14 mm., and some fine opacities, which might be likened to the remains of a well-healed interstitial keratitis, can be made out in it by focal illumination. Both children readily find needles thrown upon the floor, and the parents repeatedly state that their vision is perfectly good. Excavations of the disk have not formed in either case. There has since been no increased tension, nor has there been any return of the corneal cloudiness.

To the unusually careful nursing which both patients received after the operation I partly attribute this happy result. For months the children were kept by their attentive parents in a moderately darkened room, and the application of moist heat and the use of myotics were faithfully carried out.

Speaking of the iris prolapse noticed in the case of the first child, I might say that this word hardly describes the condition present. It is really a mixture of prolapse of the iris and cystoid cicatrix, for while in the anterior half of the scar the iris is involved, there is no area in the posterior portion which is covered by conjunctiva.

That the observations made in the case just described render it certain that filtration through scar tissue is what occurs after operations upon glaucomatous eyes seems to me to be beyond cavil, and I find in them support to the proposition which I advocated in vol. 33, II, 210 of these archives.¹

If sclerotomy has in common with iridectomy the property of making filtration possible in buphthalmos, it is superior to the latter for another reason. Mauthner mentions this. He states that iridectomy in buphthalmos has its disadvantages. In the first place the vitreous may easily escape through the stretched and pervious zonula of Zinn. If the operator makes an incision of the ordinary length (6-7 mm.) he cannot remove a sufficiently large piece; if he makes a larger, longer one, he increases still more the danger from loss of vitreous. I might add another valid objection to iridectomy. The iris as a complete diaphragm acts the part of a defence for the lens during the changes incident to accommodation; it guards in buphthalmic eyes against trembling (Schlottern) of the lens, which it lessens when it cannot be altogether prevented. We surrender most of this advantage when we cut through the sphincter iridis. There can be no doubt but that a mobile lens is a cause of irritation of the choroid. One must not forget, too, another advantage of sclerotomy; it can not easily fail as an operation, and under all circumstances the wound heals readily. It is just here that a very important point in the cure of buphthalmos must be considered; if the aqueous is allowed to flow away too rapidly, dangerous intra-ocular bleeding may occur. For this operation children, as Dufour pointed out, should be put under the influence of an anæsthetic.² When profoundly asleep puncture and counter-puncture must be made, the aqueous allowed to flow off slowly and the bandage applied while there is no resistance from an unquiet patient. Finally, especially careful nursing must be provided if one wishes to guard against accidents.

¹Die Lehre vom Glaucom, S. 251.

²Dufour, Beiträge zur Ophthalmologie als Festgabe f. Fried. Horner, s. 113.

The author who may fairly claim to have been the first to consider buphthalmos as glaucoma is Mauthner.³ This doctrine has become better known through Muralt's work in Horner's clinic.⁴ While we recognize the great value of the work done by both these authors, we must add that Dufour removed the last doubt as to the true nature of the disease—that we have to deal with a genuine primary glaucoma, differing in no respect from the same disease in adults, except, possibly, in the elasticity of the ocular coats due to age.

We shall the sooner appreciate the difference between the two positions taken as to the character of the disease by quotations from the various authorities. Von Muralt writes (p. 52): "The origin of *cornea globosa (opaca)* cannot be determined although it appears to me that the corneal opacity (Muralt distinguishes *cornea globosa semper pellucida* from *cornea globosa opaca*) points to an intra-uterine affection of the cornea, in consequence of which the corneal tissue (without having necessarily suffered in its entirety) no longer possessed the normal resistance. On the other hand I am inclined to regard keratoglobus, with its invariably transparent cornea, as a malformation, *i. e.*, the thin, undeveloped cornea has allowed of stretching, even when the intra-ocular tension had not been raised." P. 53: "The question to be settled is this: Is the primary process an increased intraocular pressure, giving rise to stretching of the cornea and all the other symptoms, or is the cornea globosa the initial lesion and the cause (through stretching of its own nerve supply) of the increase of tension with the other symptoms of secondary glaucoma, such as one sees so distinctly in the advanced stages of hydrophthalmos? In this connection it may be affirmed that although increased intra-ocular pressure may be able to impart a globular shape to the cornea, and although the other parts of the eye may subsequently participate in this stretching, yet, on the other hand, our previous researches make it more probable

³Loc. cit., p. 47.

⁴Ueber Hydrophthalmos congen. von Muralt. Inaug. Diss. Zürich, 1869.

that the extreme hardness of the bulb, the excavation of the disk, etc., are of secondary origin, and that the first cause is a congenitally abnormal cornea."

Dufour, speaking of this plain statement that hydrophthalmos is of the nature of secondary glaucoma, remarks that there are but two considerations that could prevent us from regarding it as a primary affection: first, the imperfect closure of the filtration angle, and secondly, the deep anterior chamber. The first objection fails because we possess, as yet, no description of the pathological changes in hydrophthalmos, and the second may be met by reference to certain simple physical laws.

*"Je crois que l'affaiblissement de la Zonula de Zinn, qui résulte de la dilatation de l'ouverture sclerale, les lacunes peut-être de la zonula permettent aux pressions de s'équilibrer absolument de façon à laisser à l'iris sa position normal."*⁵

One would scarcely deny the assertion that the first objection to the idea of a primary glaucoma, viz., imperfect closure of the filtration angle, carries but little weight. Descriptions of pathological changes, the absence of which Dufour notes, are sufficiently sure, even at this date. These, in view of their etiological interest, we shall now consider.

First of all is Raab's⁶ report, in 1876, of a case of buphthalmos with fairly good visual acuity; the child recognized a candle-flame at 15 feet. The results of the histological examination in this instance are all the more important because in our time we would not be at all likely to have such an eye for examination, since we would not consider it incurable and doom it to enucleation.

Without going too deeply into the details of Raab's report, I shall quote the conclusions he arrived at: "The pathological processes which bring about the secondary alterations present

⁵["I believe that the weakening of the zonula of Zinn that results from a stretching of the scleral coat-openings it may be in the zonula—allow of such a perfect distribution of the (intra-ocular) pressure that the iris retains its normal position."]

⁶Beiträge zur pathologischen Anatomie des Auges. Zehender's Monatsbl., 1876, p. 22.

have their chief seat, as well as their point of distribution, in the peripheral portion of the iris, and in those parts of the ciliary body lying next the limbus.

Here we find the traces of an inflammatory process, partly complete, partly active, which has affected the structures at the junction of cornea and sclera.

The well-known susceptibility of the ciliary body to inflammatory irritants (unlike the cornea and sclera), as well as the pathological alterations found in the first convince me that the primary seat of the inflammation is not in the corneal tissue, but in the uveal tract, and especially the extremely vascular corpus ciliare."

Schiess furnishes us with additional facts with which to arrive at a conclusion about this disputed question.⁷ Since the patient, whose eye had been removed, was 27 years old, one may readily conclude from the examination where the original disease arose. It may, however be noted that the spaces of Fontana were obliterated by a tongue-like proliferation from the iris, and that the choroid appeared pretty generally atrophied. Of two other observations by the same author,⁸ the first closely resembled the foregoing. The patient was 25 years old, and had been blind for nine years. In her case Horner had diagnosed hydrophthalmos from cyclitis three years before the enucleation. The second, a girl, æt. 7½ years, had had an iridectomy performed (1862) for the ectasia. No benefit followed. Some weeks after an attempt was made to remove "the very hazy lens." During the operation the globe collapsed to one-half its former size, and although it filled out again shrinking finally set in. After excision the vitreous was found to be entirely fluid, together with the formation of thick bands of connective tissue in the ciliary body. It is chiefly this latter condition which the author is inclined to connect with hydrophthalmos.

⁷Schiess. Vier Fälle von angeborenen Anomalien des Auges. Arch. f. Ophth., Bd. xxx, 3, p. 191.

⁸Schiess, Arch. f. Ophth., Bd. ix, 3, p. 171.

After a very careful examination of a case of congenital hydrophthalmos in a child æt. 13 years, Grahamer¹ believes the primary process to be a uveitis—a cyclitis serosa. He regards the other changes as results of this, “that the narrowing of the lumen of Leber’s venous plexus and the distortion of the spaces of Fontana produced by the stretching of the anterior scleral segment and cornea must be considered as a result of the increased tension. This is all the more intelligible since every reduction of the transverse section [of the veins] must necessarily be accompanied by a decrease in the outflow of the intra-ocular fluids.” The author further notices that the thinning of the ciliary body was as advanced as that present in a high degree of myopia. I have myself made a similar observation in a case of glioma with secondary increase of tension and ectasia of the bulb. The atrophy of the ciliary body was in that case so marked that it appeared to be absent. Manz,² as a result of a post-mortem examination, believes congenital hydrophthalmos to be the sequence of a chronic inflammatory process in the choroid and ciliary body which, occurring during foetal life, gives rise in the majority of instances to watery products.

Ophthalmoscopic examinations indicate the presence of these choroidal alterations. ³Brunnhuber noticed in one of these cases numerous circumscribed (large and small) choroidal patches situated at some distance from the papilla. In the second eye, besides the hydrophthalmic condition there was irideremia—a state of affairs which will be noticed later. ⁴Mellinger discovered distinct changes in the choroid. I have not been able to find any such fundus affections in my own cases.

¹Grahamer, Beiträge zur pathologischen Anatomie des Hydrophthalmos congen. Archiv. f. Oph., xxx, 3, 265.

²Manz. Anatomische Beschreibung eines hydrophthalmos congen. Bericht der Naturforscherversammlung in Freiburg. S. 252.

³Brunnhuber, Klinische Monatsblätter f. Augenheilkunde, xv. s. 104.

⁴Mellinger. Zwei Fälle von Hydrophthalmos congen. Klin. Monatsblätter f. Augenheilkunde, xxv., 345.

Of those observers who hold the same opinion from a clinical standpoint, I may first mention Alexander.⁵ "Whether congenital hydrophthalmos, or buphthalmos—the result of an intraocular choroiditis—be the outcome of syphilis or not, cannot be determined, as we have not a sufficient number of observations or certain evidence to show. I have been able to establish a history of syphilis in two out of five mothers who have borne buphthalmic children." Pflüger⁶ speaks in a similar manner in his extremely interesting paper on the Glauser family. ["The mother of this famous family had a bilateral iridderemia. The father was a drunkard. The eldest child—a boy, æt. 15 years—suffered from microphthalmos and congenital phthisis; one daughter, æt. 12 years, had a bilateral iridderemia; the second daughter, æt. 9 years, was normal and the fourth child, æt. 6 years, had on the right side a well-developed and on the left a beginning hydrophthalmos. She also had a bilateral and total iridderemia. An infant (boy), æt. 5 months, had bilateral and total iridderemia"].

I shall not consider those cases which are not purely hydrophthalmic in character, but pass on to say that every scientific observer who has examined the disease in adults regards buphthalmos as an inflammatory affection of the uveal tract and especially of the anterior portions of the choroid.

Fairly often it has been recorded that several children in the same family suffer from this disease. Muralt mentions that Junken⁷ refers to a Swedish family in which seven sons of the same father and mother suffered from hydrophthalmos although the parents and two sisters were absolutely healthy. Von Muralt himself records several such examples where in two instances two, and in two other cases three brothers and sisters suffered from this disease. Heredity was not an etiological factor in these cases; nor were the parents markedly myopic. There was no mention made of a family history of glaucoma

⁵Alexander. Syphilis und Auge. 194.

⁶Pflüger's Jahresbericht (1882) der Univers. Augenklinik in Bern.

⁷Dessen Handbuch, p. 541.

but no doubt it would have been mentioned had that disease been present.

So far as concerns the prognosis we may expect in the cases described above a favorable result. Horner's division of hydrophthalmos into *cornea globosa*, *kerato globus pellucidus*, and *keratoglobus turbidus*, the first alone being considered that in which vision may be preserved, can no longer be maintained. The fact of increased tension removes one case from the first category and makes it one with the second and third so far as the prognosis is concerned. The tension in that instance still remains the same and the perfectly clear cornea allows the hope that the eye had been free from increasing intra-ocular pressure during the later months of uterine life and that the disease is at a standstill and is cured.

Of the authors who express themselves unfavorably about the chances of successfully treating this disease I shall cite only Derby⁸ and E. Meyer. The former thinks it is infrequent as it is hopeless. Meyer⁹ says prognosis is very unfavorable "because almost complete loss of vision attends the progress of the disease, which has shown itself to be unaffected by any treatment." On the other hand Dufour¹⁰ was, so far as I know, the first to state decidedly and definitely that if taken early enough an operation (iridectomy) would yield favorable results. "I believe," said he, "that especially if tried upon a case of hydrophthalmos in its earliest stage it will be followed by excellent results." Mauthner¹¹ expresses himself thus: "According to my opinion the operation (sclerotomy) should be made immediately after birth or at the beginning of the development of the disease. Waiting till the child grows older only allows it to make further ravages; the bulb increases abnormally in size and blindness is the certain result. On the other hand

⁸Derby. Archiv.f. Augenheilkunde, xiii, 1. Drei Fälle von Iridectomie bei Hydrophthalmos.

⁹Handbuch der Augenheilkunde. s. 115.

¹⁰L. c., p. 121.

¹¹Lehre vom Glaucom., p. 252.

sclerotomy in the first stage of the process not only retards it but restores the eyeball quite or almost to the natural status."

The first favorable result of iridectomy is recorded by Muralt.¹² Both eyes of a child were operated upon by Horner; the color of the optic nerve improved; the tension decreased; the visual acuity was raised and the cornea became more transparent. No further history of the case appeared. After a considerable lapse of time, 1869-1882, Dufour followed with several good results of iridectomy performed on five children. In one case, a boy, æt. 7 years, vision rose from $\frac{1}{10}$ to $\frac{1}{2}$ and remained there until, when 16 years of age, it was lost from amotio retinæ. In the second case (æt. 6 months) the eye became visibly smaller, but unfortunately the little patient died shortly afterwards. In a third the tension became normal but the cornea did not clear up.

Mellinger's¹³ second case also seems to have been favorably influenced by iridectomy although the prognosis was extremely unfavorable.

As opposed to these positive experiences the results of operations reported by Streatfield¹⁴ and Pflüger¹⁵ have a limited significance since they merely illustrate the great difficulties attending the treatment previously referred to. Moreover, Prof. Pflüger and Dr. Eissen both inform me that the treatment of hydrophthalmos in the klinik at Bern is more successful than formerly.

¹²L. c., p. 16.

¹³Mellinger. *Klinische Monatsblätter*, 1887, 347.

¹⁴*Lancet*, February, 1882. Observations on Some Congenital diseases of the Eye.

¹⁵L. c., p. 43.

SOCIETY PROCEEDINGS.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

THURSDAY, NOVEMBER 13, 1890.

HENRY POWERS, F.R.C.S., PRESIDENT, IN THE CHAIR.

OPERATIONS FOR PTOSIS.

Dr. Berry (Edinburgh) read a paper commenting on most of the known operations for ptosis, but especially upon the method employed by Eversbusch and that introduced by Snellen, and called by their names. He had performed Eversbusch's operation eleven times and Snellen's six times, but had not always been satisfied with the results. However, in any case of ptosis, which called for operation at all, he advised the performance of one of these two operations, because they were capable of producing at least as great an effect as any other operation and because they admitted of repetition if necessary, with a good chance of further improvement, or they might be followed by another operation, such as that devised by Panas.

The president mentioned cases in which he had shortened the tendon of the levator palpebræ.

Mr. Tatham Thompson (Cardiff) stated that he had not found the method advocated by Prof. Snellen effectual. In his own cases he had had recourse to subsequent shortening of the levator palpebræ by inserting threads.

Mr. Lang said that in cases where he had not tied the threads over a piece of drainage tube they had sunk into the

skin and caused the formation of small abscesses. Four cases had been operated upon, in all of which suppuration occurred. Lately he had adopted Panas' operation, employing, however, a curved incision instead of a flap, with excellent results.

Mr. Juler had employed the superficial subcutaneous suture in the method described by Pagenstecher with admirable results; particularly in his last three cases.

Mr. Mackinlay described a method employed by Mr. Hulke. A Graefe's knife was inserted at the outer extremity of the lid and passed along so as to separate the skin from the orbicularis muscle, the knife was then withdrawn and the skin puckered and maintained in a large wide fold. More recently he had himself preferred making three small folds instead of one broad one, and maintaining them by the insertion of stitches till the end of the second week. There had been no suppuration. The results were good, but when the affection was unileteral he had not seen complete symmetry restored.

Mr. McHardy thought they were in want of a really satisfactory operation to remedy a pitiable deformity such as ptosis. From his own experience he thought Pagenstecher's operation was the best.

Mr. Doyne mentioned three cases in which he had employed Snellen's operation, using three sutures. One had suppurated, but in all there was decided improvement. He thought that, considering how many structures were involved, perfect results could not reasonably be expected.

Dr. Berry briefly replied to the remarks of other members.

ON INDIVIDUAL DIFFERENCE IN THE DEGREE OF LATENT
LATERAL DEVIATIONS OF THE EYES ON LOOKING
UPWARDS AND DOWNWARDS.

Dr. Berry communicated the results of experiments he had made upon the students and others in reference to the point above mentioned, and illustrated his remarks by diagrams. The cases were all examined by Maddox's glass-rod, and of the total number (50), in nine the degree of convergence was the

same on upward as on downward fixation; in twenty-eight the degree of convergence was greater on downward fixation, and in thirteen it was greater on upward fixation. The main conclusion from the investigation was that increase in convergence downwards was only about twice as frequent as increase in convergence upwards. Dr. Berry referred to the increase in homonymous separation of the images in sixth nerve paralysis, which usually, though not invariably, occurred on looking down, and suggested that in these cases the increase might not be only the difference in latent deviations on upward and downward fixation, but also the difference in the effort made to unite the double images in the two positions.

Mr. Wray said that in cases of latent deviation, for the examination of which he employed Stevens' phorometer, he had generally discovered the inequality of visual acuity in the two eyes. He suggested that it would facilitate the comprehension of intricate subjects such as that under consideration if the members of the Society were supplied with an abstract of the paper beforehand.

Mr. Priestley Smith thought that Dr. Berry's paper and diagrams showed that there was not that close connection between downward movement of the eyes and convergence and the converse as was formerly supposed to exist. He thought, also, that the presence of latent deviation might account for the giddiness many people experienced in looking down from a height, and the vertigo and headache often experienced in looking up, for example, in picture galleries, for some time.

In reply, Dr. Berry stated that the experiments were all performed with the eyes directed to a distance of five mètres, so as to ensure approximate parallelism of the optic axes. The question to be determined was, whether the phenomena described depended upon physiological or anatomical conditions.

CASE OF DOUBLE HEMIANOPSIA.

Messrs. H. R. Swanzy and Louis Werner communicated this paper. They alluded to the experiments on the dog and

monkey by Munk and Schafer, which showed that there was a definite correlation between certain parts of the occipital lobes and the different segments of the retina. In man also the correlation was shown to exist in a case quoted by Dr. Henry Hun, in the *American Journal of Medical Sciences* for January, 1887, where, after an apoplectic seizure, a man lost the left lower quadrant in each field, owing to a lesion involving the lower half of the right cuneus, discovered at the necropsy two years later. This case went to prove that the fibres from the right upper quadrant in each retina terminated in the right cuneus, and that the fibres from the lower quadrant of each retina terminated in the right cuneus, or in the right gyrus lingualis, was rendered probable by a study of recorded cases. A similar relationship would of course exist between the left quadrants of each retina and the left cuneus and gyrus lingualis. The subject of the present communication was a man, æt. 42 years, who had an apoplectic seizure in February and was unconscious for three weeks. On his recovery he was unable to raise his left arm, gave contradictory accounts of himself, and had lost the right upper and both lower quadrants of each field. The remaining quadrant in the left field was accurately defined, but in the right extended a little into the left lower and right upper quadrant. The nature of the lesion was most probably hæmorrhage; and from the impossibility of indicating a position in which one lesion would be likely to produce hemianopsia and brachial monoplegia, the authors concluded that there were two distinct lesions in the right hemisphere. A lesion of the internal capsule involving arm and vision must have included the leg + sensation, which were not affected in this case. The paralysis of the arm was most likely due to a cortical lesion, judging from experience in other instances of monoplegia, and the loss of portions of the lower quadrant of the visual field was almost certainly due also to a cortical lesion, the only other situation which suggested itself being the optic radiations, where such a restricted invasion of the fibres was scarcely to be expected. Furthermore, in the light of Hun's case this lesion was in the

lower half of the right cuneus. The lesion in the left side of the brain causing loss of the right half of each field could not be localized with so great a degree of probability. The absence of concomitant symptoms referable to that side of the brain suggested its site in the optic tract, radiations, or cortex. The absence of the hemiopic pupil negatived its being in the tract, and the optic radiations were unlikely, for the reasons adduced above, hence the lesion was also probably cortical and situated in the left cuneus and gyrus lingualis.

Dr. Beevor thought that there must have been a double lesion, and referred to a somewhat similar case recorded by Dr. Hughes Bennett, in which after death two lesions were discovered, one in the internal capsule and one in the cuneus.

A CASE OF HEMIANOPSIA.

Mr. Richard Williams (Liverpool) read an account of a miner, *æt.* 42 years, who exhibited neuro-retinitis and very marked horizontal limitation of the fields of vision. He remarked that cases of horizontal hemianopsia were by no means common, but the loss of the upper half of one field and the lower half of the other rendered the present case unique in medical literature, though the possibility of such a condition was suggested by Wilbrand.

A CASE OF ALEXIA.

Mr. Richard Williams described this case, occurring in a man, *æt.* 57 years. He could see words distinctly, but appeared as if beginning to learn to read, and could make no sense of them. He wrote readily from dictation, but could not afterwards read what he had written. After he had written part of a letter spontaneously, he was unable to read it, though he could recall the sense. Memory was somewhat defective, and he was more emotional than usual, but could say the names of surrounding objects without difficulty. The fields of vision presented the usual character of right homony-

mous hemianopsia, the blind line reaching to within about 10° of the point of fixation. Otherwise the appearance of the eyes was normal. Improvement was very slow and incomplete.—*Brit. Med. Jour.*

THE BOWMAN LECTURE.

The Bowman Lecture on "Sir William Bowman's Work in Relation to Ophthalmology" was delivered by Mr. J. W. Hulke. After some introductory remarks, he said that Sir W. Bowman had enjoyed a great advantage in having first practised general surgery before his attention became concentrated on ophthalmology. Another thing which gave him a great advantage over some of his contemporaries was the training in habits of close observation and reflection acquired during years of patient toil as a demonstrator of anatomy and in the prosecution of those microscopical researches which soon placed him among the foremost investigators of his time. The discovery of the muscularity of the body since known as the "ciliary muscle," made almost concurrently here by Bowman and in Germany by Brucke, laid the anatomical basis of a theory of "accommodation," which yet held good. The "Lectures on the Anatomy of the Parts Concerned in the Surgical Operations on the Eye," delivered by Sir William Bowman soon after his first connection with the Royal London Ophthalmic Hospital, and published in 1846 in the form of a book, admirably met the want fifty years ago of a sound treatise on the microscopic anatomy of the eye. The "anterior elastic lamina" of the cornea and the interstices in the corneal tissue there made known, soon received the familiar names of "Bowman's membrane," "Bowman's tubes." It was by Sir W. Bowman's enterprise that medical students in this metropolis had first placed within their reach the means of beginning the prosecution of original microscopical inquiry. In 1846 extremely few medical students possessed microscopes. Sir W.

Bowman met this want, in so far as it concerned the students of King's College, where he taught physiology jointly with Dr. Todd, by procuring from the firm of Nachet, of Paris, microscopes which cost only £5. The importation of these stimulated English makers to produce the cheap yet excellent instruments now so widely used; while Sir W. Bowman's teaching and example created a love of histological research, which had continued to extend. Passing from anatomy to the domain of practice, Mr. Hulke referred to improvements which had originated out of the practice of slitting up the lacrymal puncta and canaliculi devised by Sir William Bowman, first practised by him for epiphora due to displacement or closure of the puncta, and subsequently extended by him to the treatment of obstructions of the nasal duct and their consequence. This method, its development and its applications, were described in two papers, one published in the *Transactions of the Royal Medical and Chirurgical Society* for the year 1851, and the other six years later in the *Ophthalmic Hospital Reports*, vol. i, 1857. For dividing strictures of the canaliculi Sir W. Bowman devised a canula lancet, which was figured in the *Annales d'Oculistique*, vol. 1855-56. It was in principle a miniature urethrotome *cache*. For the operative treatment of ptosis, particularly of congenital forms, he devised a highly ingenious plan of looping up bundles of the orbicularis palpebrarum muscle, taken up with an extremely fine silk thread close to the free border of the lid, and of giving to these bundles a vertical direction by connecting the closed end of the muscular loop with the brow, through the mediation of the cicatricial band which should play the *role* of a minute "tendon of origin." He also adopted this procedure to the correction of entropion of the lower eyelid. The subcutaneous plan of operating for squint, devised by the late George Critchett, and elaborated in conjunction with him by Sir W. Bowman, was a great improvement upon the earlier method of a free section of the tendon with all the tissues overlying it. In connection with this subject Sir William Bowman devised a ready, and for most clinical purposes sufficiently accurate, way of apprais-

ing and recording the amount of deviation of the squinting eye, by noting the interval between the lower ends of two ideal vertical lines, dropped through the centre of the pupil upon the lower eyelid, one in the faulty, the other in the medium, position of the eye with reference to the lid. Another subject, in the operative treatment of which Sir William Bowman took much interest, was conical cornea. A paper on the subject was published by him in the *Ophthalmic Hospital Reports*, vol. ii, pp. 134-67, 1859. In the surgical treatment of cataract, dissection, in the early years of Sir William Bowman's active service at the Royal London Ophthalmic Hospital, was much more widely employed than now. Mr. Hulke had notes of three cases in which Sir W. Bowman practised it in 1849, the ages of the patients being 60, 64 and 65 years. In the softer forms of cataract of early life dissection still held its ground, but the relatively long time occupied in solution, even in the soft forms of cataract, must often have led surgeons to wish for some speedier way. Gibson sought to shorten the time occupied in solution by evacuating the lens, just broken up with a cutting needle, through a small corneal incision made with the same needle with which he had comminuted the lens. For the more thorough removal of softened pulpy lens tissue slender channelled evacuators and also suction instruments were invented. Of suction instruments the two best adapted forms were tubes exhausted by the operator's mouth and syringes. Of the latter one of the best was the syringe devised by Sir William Bowman and bearing his name. This he used not merely for the removal of the opaque lens tissue by suction, but in a few instances he endeavored also to remove the last vestiges of lens by washing out the chambers with distilled water injected with the syringe. Gibson's linear extraction was a procedure in which Sir William Bowman felt much interest, and to the perfecting of which he gave much thought. The first demonstration of the true nature of the appearances exhibited by the form termed zonular or lamellar cataract was given by Sir W. Bowman, when Professor of Physiology in King's College, about the year 1846. Depression, which had

fallen into disuse, was, in 1854, revived by Sir W. Bowman, who, about that time tried it in several cases in the Royal London Ophthalmic Hospital. Larger experience of the operation, however, showed that not infrequently it was followed by an insidious cyclitis, promoted, apparently, by the presence of the displaced lens, and this persisted and implicated the other structures of the globe, in spite of treatment, and finally involved total loss of sight. This seemed one of the principal reasons why depression was soon again relinquished. The methodical combination of iridectomy with extraction, though a corneal incision of less extent than that made in the older flap method of extraction, effected by the aid of a traction instrument originated by A. von Graefe, was adopted in 1860 by Sir W. Bowman and his colleagues at the Royal London Ophthalmic Hospital. Sir W. Bowman's modification of the scoop and others, were figured in a paper published in vol. iv, 1865, *Ophthalmic Hospital Reports*, entitled "On Extraction of Cataract by a Traction Instrument, with Iridectomy, with Remarks on Capsular Obstructions." Extraction up to about the year 1850, in London, was performed generally in the manner now designated flap extraction, to distinguish it from a later procedure devised by A. von Graefe. It was performed under difficulties now known to few, and it certainly demanded much greater dexterity, for no speculum was used, but the operator himself raised and fixed the upper eyelid, his assistant depressing and fixing the lower lid; fixation forceps were not known, the eyeball was steadied only by the operator's fingertip applied at the nasal side of the globe in opposition to the pressure of the knife as this punctured and crossed the anterior chamber. Mr. Hulke said he had a vivid recollection of many such operations brilliantly executed by Sir W. Bowman. In London Sir W. Bowman was, he believed, the first surgeon who employed chloroform in extraction. One inconvenience attending the use of Beer's knife—wrongly so called—in extraction, was the difficulty of making with it an uniformly curved, regular section of the cornea. With the narrower knife, devised by Sichel, the operator would regulate

the corneal incision with great nicety, and in Sir W. Bowman's hands this knife quickly replaced Beer's knife previously in general use. Later still, Sir W. Bowman used the yet more narrow knife known as Graefe's, and adopted the form of extraction which bore the name of that illustrious oculist. The inefficacy of pharmacal therapeutics to cure, or even to control, the conditions comprised under the general designation, "detached retina," "subretinal dropsy," must have often originated the idea of treating these accumulations of fluid directly by paracentesis. Some cases were so treated by Sir William Bowman at the Royal London Ophthalmic Hospital in 1864, but the results did not encourage an extensive trial of this method. A paper on this subject by Sir William Bowman appeared in the *Ophthalmic Hospital Reports*, vol. iv, p. 133, 1864. The epoch-marking paper on the "Treatment of Glaucoma by Iridectomy," communicated by Albrecht von Graefe to the International Congress on Ophthalmology at Brussels in 1857, excited Sir W. Bowman's deep interest, and he at once began at the Royal London Ophthalmic Hospital an extensive trial of the operation. His great example and influence, together with those of colleagues, soon won for it here the general assent it yet retained. His publications on the subject were papers on Iridectomy in Glaucoma, in *Medical Times and Gazette*, 1860; on Glaucomatous Affections and Their Treatment by Iridectomy, *British Medical Journal*, October 11, 1862; and Glaucoma and Iridectomy, *Ophthalmic Hospital Reports*, vol. iv, pp. 41-58, 1863. In connection with the subject of glaucoma should also be read a series of Cases of Misplaced, Malformed and Dislocated Lenses, in some of which Glaucomatous Symptoms Developed, published by Sir W. Bowman in *Ophthalmic Hospital Reports*, vol. v; and also his remarks in the discussion on glaucoma in the Section of Ophthalmology at the annual meeting of the British Medical Association held at Cambridge in 1880. In connection with the formation of an artificial pupil by iridodesis, etc., Mr. Hulke mentioned Sir W. Bowman's invention of a combined cutting needle and hook which enabled the operator to effect with one instru-

ment the corneal puncture and the seizure of the pupillary margin, instead of requiring for this both a cutting needle and also a hook, such as Tyrrell's. Sir William Bowman also had blunt iris hooks of the general form of Tyrrell's, and constructed of a flexible metal, so that the shape of the hook could be bent to any desired angle—a matter of much convenience when operating at the nasal side of the cornea. A paper on Artificial Pupil and the Needle Hook appeared in the *Medical Times and Gazette* in 1852. The Ophthalmological Society was under great obligations to Sir W. Bowman for his fostering care in its early years, and for the valuable addresses with which he opened its three first annual sessions. The esteem in which Bowman and his works were held wherever ophthalmology had votaries was shown by the acclamations which greeted his election to the president-ship of the Section in the International Congress held in London in 1881. Mr. Hulke, in conclusion, said that in the rapid advance of ocular surgery which the last half century had witnessed, their first president had in this country played a most important role.—*Brit. Med. Jour.*

OBITUARY.

ERNST ADOLF COCCIUS.+

Ernst Adolf Coccius was born September 19, 1825, at Knauthain near Leipzig. He began his studies in the city of the Muses, Leipzig, in which he spent the largest part of his life as investigator, teacher and physician; then he went to Prag, where clinical teaching in ophthalmology had been inaugurated by Johann Nepomuk Fischer, and been built up by Hasner and Arlt; finally he went to Paris, where in the middle of the century the studious disciples of *Æsculapius* used to travel, and where the modern French school of ophthalmology had been founded by our countryman, Sichel.

After his return from 1849 to 1857, Coccius was assistant and private docent, then until 1867 extraordinary, and from then until his death ordinary professor and director of the ophthalmological clinic of the university of Leipzig.

Coccius was an original investigator and full of new ideas, and was one of the founders of the ophthalmoscopic æra. When, 29 years ago, I first heard the lectures of my teacher, A. von Graefe, he had in his hands the ophthalmoscope of Coccius; with this instrument we made the first investigations in the direct method. In fact, when comparing the fundamental work of Helmholtz, of the year 1851, and that of Ruete, of 1852, with the one of Coccius in 1853, we cannot help being astonished at the progress made in the practical use of the instrument as a means of diagnosis of eye diseases. Its physiological part contains studies on the pulsation of the central retinal vein, on the degree of transparency of the retina, on the physiological color of the fundus of the eye, and

on the physiological conditions of the macula lutea. Here he describes the reflex of the fovea centralis, which was a discovery which proves the sharp eye of the discoverer. The pathological part contains not only some examples of the importance of the ophthalmoscope, as does the one in Ruete's book, but a complete description of the opacities of the refracting media and the alterations in the retina and choroid, and for the first time a true aid in the diagnosis of the internal eye diseases. The scientific standpoint to explain the appearances by means of the anatomy and physiology, is never lost sight of.

So does that other earlier work of Coccius, "On How the Cornea is Nourished," contain a multitude of original observations.

Referring to a pompous "discovery" of the last few years, I simply draw the reader's attention to page 102, note: "To simply lay a glass slide against the cornea with a drop of water is sufficient to render the retina visible."

In his inaugural lecture on glaucoma, inflammation and the autopsy with the ophthalmoscope (1859) he has also described minutely the later on "discovered" filtration scar in glaucoma, and for the first time given an account of newly-formed blood-vessels in the vitreous body.

Coccius was the first to dare to simplify the ophthalmometer of Helmholtz, and who worked with this instrument on the eye, not earlier than two years ago, yet he delighted us with important communications on this subject. He has also helped to improve the measuring of the refraction in the upright image, and made contributions to the knowledge of how to measure the intraocular tension, on injuries to the eye, on varioloid inflammation of the eyes, and on the visual purple.

To-day, even, every one may read with pleasure the report on the institution for poor eye-patients (Leipzig, 1870), especially the part on cataract-extraction, and on examining the fundus on polarized light.

Coccius was totally imbued with that humane feeling which makes the great physician. He was, furthermore, amiable to

the highest degree, and considering his position and his success, extremely modest.

Only two weeks ago, I received a friendly letter from him on some scientific matters. The news of his death came totally unexpected and shocking.

Ritterich, Ruete, Coccius, the representatives of the school of Leipzig, will continue to live in the memory of those after us.—J. HIRSCHBERG, in *Hirschberg's Centralblatt*.

FRANCOIS O. NODINE.†

As we go to press we are pained to hear of the death of Dr. Nodine, who died at sea on the steamer La Bourgoyne, from Havre, which arrived in New York November 24. Dr. Nodine was unmarried, 35 years old, and was born at Meadville, where his parents still live.

Dr. Nodine graduated from the Medical Department of Wooster University in 1880. The following year he spent in the hospitals in New York City. In 1881 he returned to Cleveland, and for three years was associated with Dr. D. B. Smith. For about two years he was Professor of Diseases of the Eye and Ear in the Medical Department of Wooster University.

Early last winter he fell a victim to "la grippe," and never fully recovered from that attack. Last August he sailed for Europe and located at Davos Platz in Switzerland, with the hopes of regaining his health.

In manner, Dr. Nodine was most affable, and of fine personal appearance. He was of a genial, social, sunny disposition, and always mingled with the very best society.—*Cleveland Med. Gaz.*



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CONTENTS:

ORIGINAL ARTICLES

Optic Neuritis: Basal Meningitis an Occasional Sequence of Measles—*D. Coggin, M.D.*..... 1
Medical Notes.—*H. Culbertson, M.D.*..... 8

TRANSLATION.

On the Value of Mydriatics and Myotics for the Improvement of Vision in Cases of Fixed Opacities in the Dioptric System of the Eye..... 13

SOCIETY PROCEEDINGS.

Tenth International Medical Congress, Berlin, 1890..... 19

SELECTION.

Symptoms of Grave Diseases of the Nervous System Relieved by Restoration of the Equilibrium of the Eye Muscles..... 23

NEWS.

Kansas City Ophthalmological Society... 35
The Ophthalmic Review... 26

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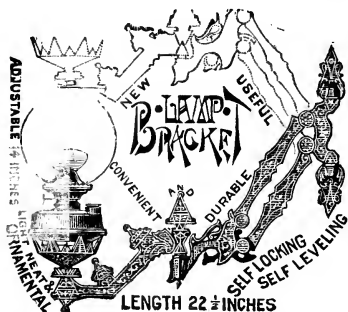
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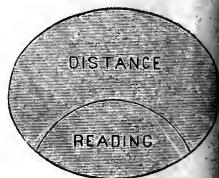
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A POWERFUL UTERINE TONIC AND ANTISPASMODIC.

The most PERFECT compound EVER OFFERED to the MEDICAL PROFESSION for the relief of the following female disorders: DYSMENORRHOEA, AMENORRHOEA, NORRHAGIA, LEUCORRHOEA, SUBINVOLUTION, PUERPERAL CONVULSIONS, RELAXED conditions of UTERUS and APPENDAGES, and THREATENED PARTURITION; directing its action in a most remarkable manner to the entire UTERINE system as a general tonic and ANTISPASMODIC, and in cases of impaired vitality, COMPLETE RESTORATION FOLLOWS ITS USE.

This happy combination is the result of an EXTENSIVE PROFESSIONAL EXPERIENCE RUNNING THROUGH A SERIES OF YEARS, in which the constituent parts have been FULLY TESTED, singly and in combination, in various proportions, until PERFECTION has been ATTAINED.

We, with the profession, have no regard for secret remedies.

DIOVIBURNIA

Prepared for prescribing exclusively, and the Formula as given, will commend itself to every intelligent physician.

FORMULA:

URNUM PRUNIFOLIUM, VIBURNUM OPULUS, DIOSCOREA VILLOSA, ALETRIS FARINOSA, HELONIAS DIOICA, MITCHELLA REPENS, CAULOPHYLLUM THALISTROIDES, SCUTELLARIA LATERIFLORA.

Every ounce contains $\frac{1}{2}$ dram each, of the fluid extracts.

DOSE: For adults from a dessert to a tablespoonful three times a day, after meals. In urgent cases, where there is much pain, doses may be given every hour or two, *always in hot water*.

The skill of a highly accomplished pharmacist and thorough chemist was required to combine the ingredients in a palatable, effective and elegant form, and at the same time retain and enhance the therapeutic action.

B. Johnson, M.D., Professor of the Principles and Practice of Medicine, St. Louis Medical College.

St. Louis, June, 20, 1888.

I very cheerfully give my testimony to the virtues of the combination of vegetable remedies prepared by a well-known and able pharmacist of this city and known as DIOVIBURNIA, the components of which are well known to any and every physician who desire to know the same, and who before have no relation to proprietary or quack medicines. I have employed this medicine in cases of dysmenorrhea, suppression of the catamenia, in excessive leucorrhea, and have been much pleased with its use. I do not think its claims (as set forth in the circular accompanying it) to be at all excessive. I recommend its trial to all who are willing to trust to its efficacy, believing it will give satisfaction. Respectfully

Chas. B. Johnson

L. Ch. Boisligniere, M.D., Prof. Obstetrics, St. Louis Medical College. St. Louis, June 18, 1888.

I have given DIOVIBURNIA a fair trial and found it useful as an uterine tonic and antispasmodic, relieving the pains of dysmenorrhea and regulator of the uterine functions. I feel authorized to give this recommendation of DIOVIBURNIA as it is neither a patented nor a secret medicine, the formula of which having been communicated freely to the medical profession.

L. Ch. Boisligniere M.D.

H. Tuholske, M.D., Professor Clinical Surgery and Surgical Pathology, Missouri Medical College; also Post-Graduate School, St. Louis.

St. Louis, June 23, 1888.

I have used DIOVIBURNIA quite a number of times; sufficiently frequently to satisfy myself of its merits. It is of unquestionable benefit in painful dysmenorrhea, it possesses antispasmodic properties which seem to especially be exerted on the uterus.

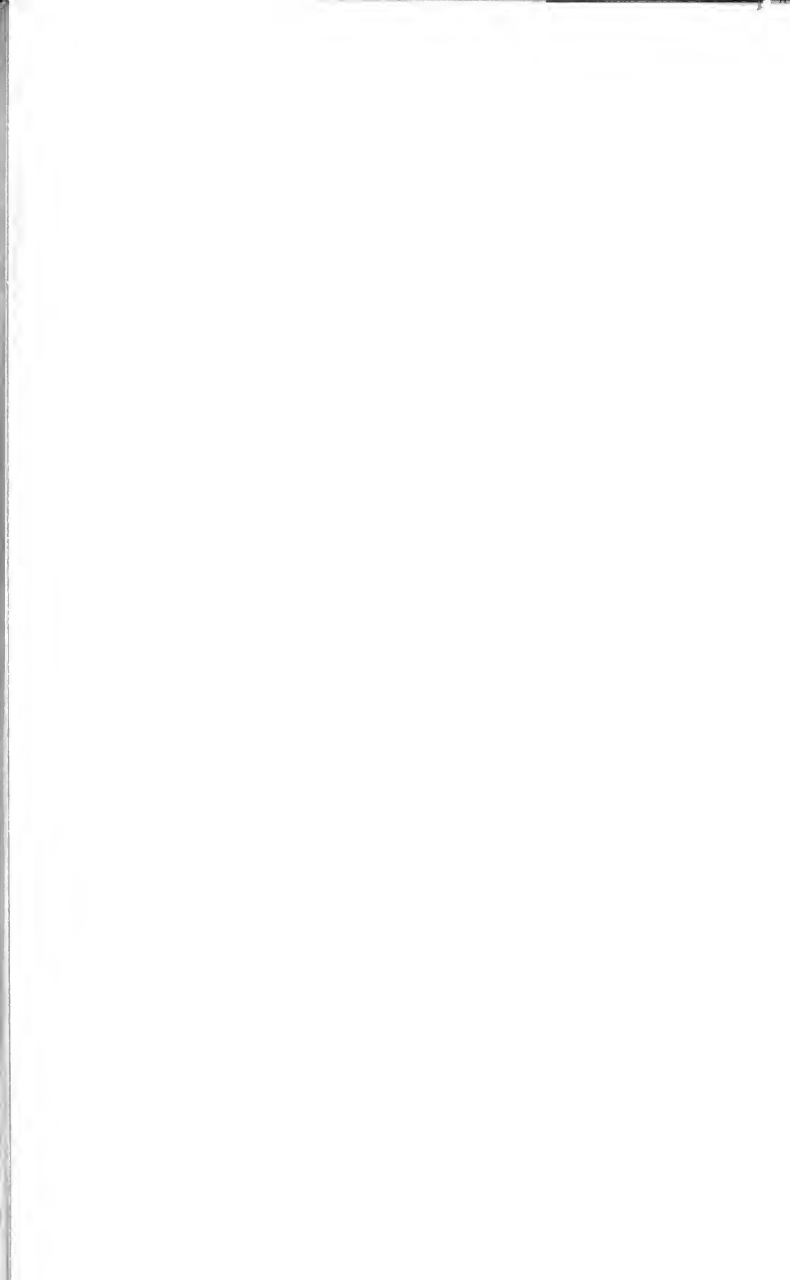
H. Tuholske

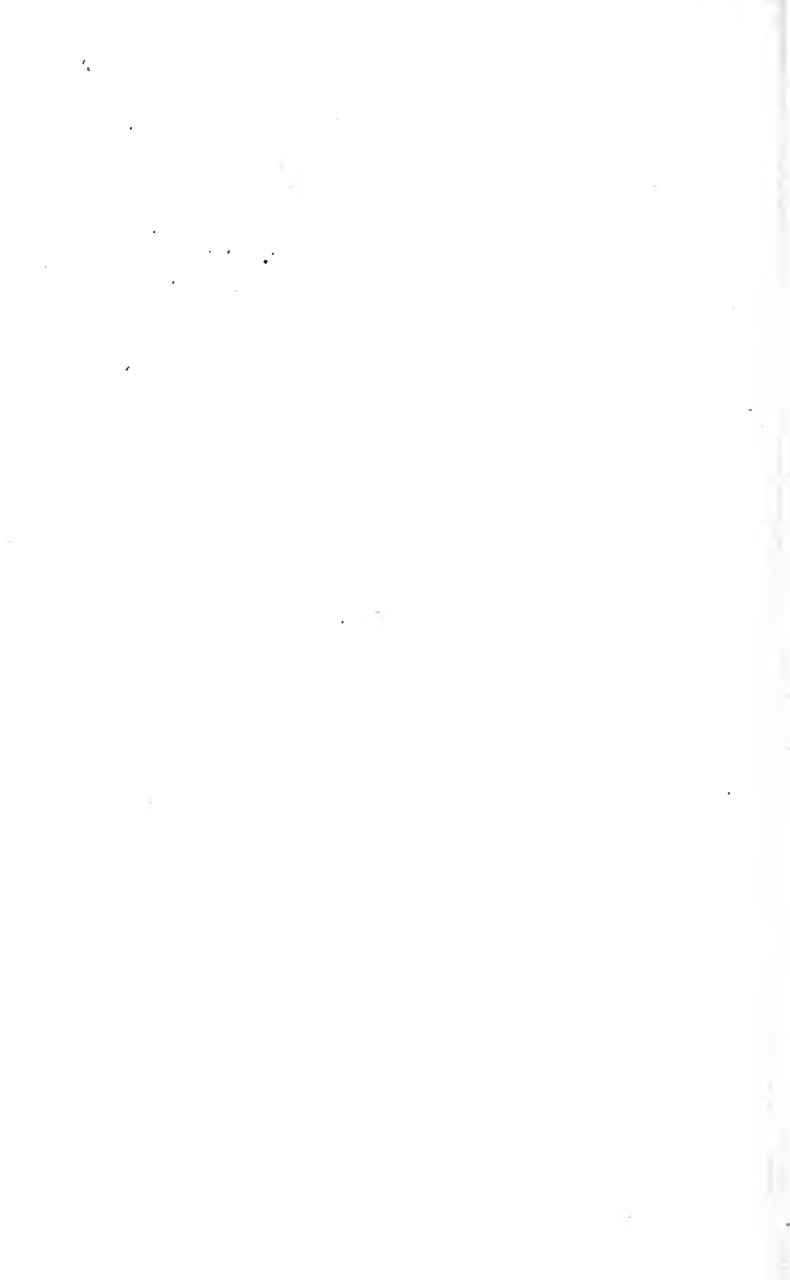
any physician, unacquainted with the medicinal effects of DIOVIBURNIA, we will mail pamphlet containing full information, suggestions, commendations of some of the most prominent practitioners in the profession, and various methods of treatment; also a variety of valuable prescriptions have been thoroughly tested in an active practice, or to physicians desiring to try our preparation, who will pay express charges, we will send on application a bottle free.

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